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CONTENTS.

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DR. GEORGE G. GROFF.
PALMS AND PINES: BYRON ANDREWS.
PROGRESSIVE AGRICULTURE: THE EDITOR.
THE MONEY BEE: PROF. GEO. G. GROFF.
HAWAIIAN COFFEE GROWING: J. N. INGRAM.
PAMPAS GRASS.
NOT ABOVE DIAMONDS—A STORY.
MISCELLANY.
EDITORIALS: THE EDITOR.
HOUSEHOLD.
SHEEP AND WOOL.
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TABLE OF CONTENTS.

Report of the Secretary of Agriculture.
Special Report of the Assistant Secretary.
Report of the Chief of the Bureau of Animal Industry.
Report of the Chemist.
Report of the Chief of the Division of Forestry.
Report of the Entomologist.
Report of the Ornithologist and Mammalogist.
Report of the Statistician.
Report of the Botanist.
Report of the Chief of the Division of Vegetable Pathology.
Report of the Pomologist.
Report of the Microscopist.
Report of the Special Agent in Charge of the Fiber Investigations.
Report of the Special Agent in Charge of the Artesian and Underflow Investigations and of the Irrigation Inquiry.
Report of the Chief of the Seed Division.
Report of the Superintendent of Gardens and Grounds.
Report of the Chief of the Division of Illustrations.
Report of the Chief of the Division of Records and Editing.
Report of the Superintendent of the Document and Folding Room.
Report of the Director of the Office of Experiment Stations.
Report of the Chief of the Weather Bureau.

LIST OF ILLUSTRATIONS.

The best idea of the scope of this magnificent work may be gathered from the following list of illustrations:

Report of the Chief of the Division of Forestry—Plate I. Longleaf pine (*Pinus palustris* Mill.), open cone, natural size. II. Longleaf pine (*Pinus palustris* Mill.), two-thirds natural size. III. Cuban pine (*Pinus Oubensis* Griseb.). IV. Shortleaf pine (*Pinus echinata* Mill.). V. Loblolly pine (*Pinus Taeda* L.). VI. Map showing distribution of *Pinus palustris* (longleaf pine) and *Pinus Oubensis* (Cuban pine). VII. Map showing distribution of *Pinus echinata* (shortleaf pine). VIII. Map showing distribution of *Pinus Taeda* (loblolly pine).

Report of the Botanist—Plate I. Mesquit (*Prosopis juliflora*). II. Spanish bayonet (*Yucca baccata*). III. Crocodile bush (*Larrea Mexicana*). IV. Acacia bush (*Acacia constricta*). V. Vine cactus or candlewood (*Fouquieria splendens*). VI. Amole (*Agave parryi*). VII. Giant cactus (*Cylindropuntia gigantea*). VIII. Palo-verde (*Parkinsonia terpestris*). IX. Branched broom-rap (*Oreocarya ramosa*). X. Saltwort (*Sarcocolla Kali var. Trogna*).

Report of the Division of Vegetable Pathology—Plate I. Black rot of sweet potato. II. Black rot of sweet potato. III. Black rot of sweet potato.

Report of the Pomologist—Plate I. Six-year old Elberta peach tree. II. Strawberries planted between potato rows. III. Strawberry field near Norfolk, Va. IV. Dai-dai (persimmon). V. Yama-tsuru (persimmon). VI. York Imperial. VII. Gans (pear). VIII. Crosby (apple). IX. Burbank (apple). X. Keweenaw (raspberry). XI. Guava (three species).

Report of the Microscopist—Plate I. Pure lard and fetid lard. II. Agaricus melanos. III. Agaricus deliciosus. IV. Cantharellus cibarius. V. Fistulina hepatica. VI. Structure of the gill-bearing mushrooms. VII. Revolving stage for viewing microscopic sections etc. VIII. Machine for testing the tensile strength of vegetable fibers and thread. IX. Machine for testing binder twine.

Report of the Special Agent in Charge of the Fiber Investigations—Plate I. Plant of *Agave rigida*. II. View of a Sinaloa hemp plantation in Yucatan.

Report of the Special Agent in Charge of the Artesian and Underflow Investigations and of the Irrigation Inquiry—Map I. Map showing irrigation areas and artesian wells west of the 97th meridian.

Report of Superintendent of Gardens and Grounds—Plate I. Tree just removed from nursery; also red oak three years after planting. II. Carolina poplar not pruned since setting out. III. Carolina poplar severely headed back. IV. Silver maple not pruned since setting out. V. Silver maple after severe heading back. VI. Sycamore three years after very close pruning. VII. American linden, showing wire guard.

Report of the Director of the Office of Experiment Stations—Map I. Map showing location of Agricultural Experiment Stations in the United States.

Report of the Chief of the Weather Bureau—Plate I. Chart showing conditions of a "low" on specimen weather map. II. Chart showing path of West India cyclone on specimen weather map. III. Chart showing conditions of a "high" on specimen weather map. IV. Chart showing condition of air during a tornado at Louisville, Ky. V. Chart showing precipitation departures from March 1 to Sept. 25, 1891. VI. Chart showing temperature departures from March 1 to Sept. 25, 1891. VII. Diagram showing general weather conditions. VIII. Diagram showing general weather conditions.

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On the right in the foreground is a group of American natives, one of whom sits in adoration at the feet of the stranger. In the distance upon the ocean is shown the historic fleet which brought our adventurer to the New World. Every scene is imbued with life, while the features of each are reproduced with life-like vivacity.

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The Spanish and United States Governments propose to build a new Santa Maria, Niña, and Pinta and sail into the harbor of New York and thence to Chicago by the way of the canal and Great Lakes. They will be fitted out in every particular like their great prototypes 400 years ago, and will have on board spectators in the costumes exactly copied from those seen in this wonderful picture.

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THE AMERICAN FARMER

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WASHINGTON, D. C., NOV. 1, 1892.

Vol. LXXIII. New Series.—No. 21.

DR. GEORGE G. GROFF.

Member of the State Board of Health and State Board of Agriculture of Pennsylvania.



R. GEORGE G. GROFF was born on a farm in Chester County, Pa., near Philadelphia, in 1851. He remained on the home farm until 23 years old, working in the Summer months and in Winter attending school or in teaching. At this time his desire to introduce improved methods on the home farm caused his father to remark that George would never make a farmer, and that it was time for him to learn some other business. He had been successful in teaching, and turned his attention to that profession. He graduated at a

State Normal School, then entered Michigan University, where he studied the sciences and medicine for several years with success. He graduated in medicine in New York. To pay the debts contracted in securing his education, he accepted



DR. GEORGE G. GROFF.

two years, doing his work in so successful a manner that he received a call to the Chair of Science in Bucknell University, at Lewisburg, Pa., where he now resides a position as teacher of sciences in the Normal School where he had graduated a few years before, and which was at this time offered him. Here he remained for

and teaches. During one year he acted as President of the University, but his tastes were not in the line of the duties of a President of a denominational college.

His life has been a busy one, for besides his labors in the classroom, he is constantly called upon to lecture before the Teachers and Farmers' Institutes and elsewhere. He has made two long lecture tours in the South and one West. He is a member of both the State Board of Health and the State Board of Agriculture of Pennsylvania. He is Secretary of the Lewisburg Board of Trade, and has served two terms as County Coroner and three years as Surgeon in the National Guard.

As a sanitarian, he organized the sanitary work at Johnstown, Pa., after the terrible floods of 1889. He is a constant writer for the medical and agricultural press, and is the author of a number of books on popular and scientific subjects. For farmers he has written: "What to do First in Accidents and Emergencies," "Dairy Hygiene," "Farm and Village Hygiene," "Home-Grown Fruit for Every Day in the Year," and "Healthful Homes."

In the midst of all his labors he finds time to look after two small farms, on one of which he lives. His home overlooks the valley of the broad Susquehanna, and from his front porch he can look into seven different Counties. His recreation is in fruit growing and in testing the capabilities of the soil, at both of which he has been successful. On his grounds are to be found every fruit which will grow and ripen in this latitude. He is working out for his own section the fruits which can be profitably grown, and his orchards have been planted to supply his own table with fresh fruit every day in the year. He is interested in the use of chemical fertilizers, and is producing large crops on sterile soil by their means alone. What he has accomplished has been by his own efforts, unaided by anyone.

What Passes for Beauty.

The ladies of Arabia stain their fingers and toes red and their lips blue. In Persia they paint a black streak around their eyes and ornament their faces with representations of various figures.

The Japanese women adopt the singular method of gilding their teeth, and those of the Indians paint them red. In some parts of India the pearl of the tooth must be dyed black before a woman can be beautiful. The Hottentot women paint the entire body in compartments of red and black. In Greenland the women color their faces with blue and yellow, and frequently tattoo their bodies by saturating threads in soot, inserting them beneath the skin and then drawing them through.

In New Holland the women cut themselves with shells, and, keeping the wounds open a long time, form deep scars in the flesh, which they deem highly ornamental. Another singular mutilation is made among them, for when in infancy they take off the little finger of the left hand at the second joint. In ancient Persia an aquiline nose was often thought worthy of the crown, but the Sumatran mother carefully flattens the nose of her daughter.

The modern Persians have a strong aversion to red hair. The Turks, on the contrary, are warm admirers of it. In China, small, round eyes are liked. But the great beauty of a Chinese lady is in her feet.—*Hall's Journal of Health.*

Coal is useful for something else than fuel. The amount of coloring matter in a pound of coal is enormous. It will yield enough magenta to color 500 yards of flannel, vermillion for 2,560 yards, aurine for 120 yards, and alizarine sufficient for 155 yards of Turkey-red cloth.

PALMS AND PINES.

The Trees of East Florida, With Notes Upon the Cultivation of the Pineapple and Cocoanut.

BY BYRON ANDREWS.



MY FIRST visit to Florida was in 1880, when I accompanied Gen. Grant upon a trip through the accessible parts of the State, writing up the tour for two Northern newspapers, and incidentally making such observations as occurred to me relative to the country. At that time we heard a great deal about the Indian River country, but there was no way to visit the region except by means of sailboats by way of the ocean. We had neither time nor means then to make a coasting trip.

During the current year I again had an opportunity to make a tour into the State and eagerly embraced it, my mind fully possessed of my old curiosity to see the semi-tropical region of which I had heard so much along the southeastern shore of the peninsula. With this explanation, suffice it to say that I shall now only present some observations taken from my note book, confining myself to what information I gathered relative to the trees distinctive of the region. To one who is familiar only with the forests of the North, the arboreal growth of Florida presents many points of surpassing interest. To begin with, most of the vegetation is evergreen. There is the pine of the North, the cedar, and other cone



FIG. 1.—A VIEW ON THE HALIFAX; CABBAGE PALM SHOWING THE JACKS.

bearers, which are not unfamiliar to one who has seen their Northern cousins. The trees, however, which are strangers to the Northern visitor are chiefly those of the great palm class which follow the Torrid Zone and sub-tropics around the world, numbering over 1,000 individual species. I do not know how many there are in Florida, but probably a score or more, several of which are very plentiful and widely distributed from shore to shore in the southern half of the peninsula.

Jacksonville is the gate to Florida, and is the way through which all enter whether bound for the east or west coast. As indicated above, I bent my steps down the eastern shore with a view to pass south by way of the Halifax and Indian rivers to Lake Worth. Jacksonville is a Northern town practically, and possesses no very interesting features; but St. Augustine is a combination of a mediæval Spanish town and a Saratoga. It was altogether the former until a few years ago, when Henry Flagler, the Standard Oil capitalist, undertook to transform it into a great Southern Winter resort. Without stopping to describe the characteristics of the modern place, it may be said that its gorgeous hotels are not to be eclipsed by any in the United States. In exterior they are Spanish, while as to their interior, one of them, the famous Ponce de Leon, is simply a reproduction of bits of the noble Alhambra.

Tarrying a few days in St. Augustine, we hastened on to Daytona, situated on the Halifax River. The place is 126 miles by rail from Jacksonville and 89 miles from St. Augustine. Here I was for the first time in a portion of Florida with which I was unacquainted.

It should be explained that the word river along the eastern coast of Florida is a misnomer as understood in the North. It is a characteristic of the whole Atlantic Coast of the United States that there is an almost continuous line of waterways between the main land and outlying islands. This waterway stretches from Cape Ann to Cape Sable under the various titles of "sounds," "bays," "kills," "rivers," "passages," and even "lakes." In Florida the Matanzas River, Halifax River, and Indian River are sounds separated from the ocean by narrow sand bars usually not exceeding a half mile in width. They take their name generally from some little creek which empties in at one end or the other, but which in no sense controls the action of the current in the main body of the water. They are shallow, salt like the ocean, and rise and fall with the tides.



FIG. 2.—GROVE OF PALMS NEAR JUPITER INLET.

It may be said in the same connection that Lake Worth is precisely similar in character. It is simply a sound of salt water separated from the ocean, except at the inlet, by the usual strip of sand which lies off the eastern coast of the peninsula. This is the region of whose arboreal products I intend to say something.

The most widely distributed of the palm family is called the scrub. It is a plant rather than a tree, growing about waist high, and is that variety which furnishes the palm fan of commerce. It has the broad palmate leaf, growing upon the end of a stem a yard or more in length, arising from the common center like stalks in a bunch of ordinary pieplant. The roots of this scrub palm are fine and wiry, completely filling the ground with a net-work which no plow will penetrate. Wherever the land must be cleared for crops when the scrub is present, the Florida colored man with his universal grubbing hoe seems to be the only available agent for its suppression. The fiber of this remarkable plant is seldom utilized in Florida, although attempts have been made to manufacture a grade of fine writing paper from it, and there are in a few places factories where a stiff clothes brush is made from its roots. The sand plains, covered with this species of undergrowth, are the favored haunts of Barred owl, a bird unusually abundant in Florida.

The next palm in point of abundance is the one called "palmetto," or "cabbage palm," which is a very striking and beautiful tree. Like all of its family, it has a single trunk without branches, its foliage growing in a cluster at the top from a sort of bud or heart. This bud is edible, and when boiled its resemblance to cabbage has given the name to the tree. Its leaf is palmate, with long, spiny points around the outer edge. It grows upon the end of a stem which breaks off at a distance of about a foot from the trunk as the leaves die, giving place to the new foliage above. This remnant of the old stem is called by the natives the "jack," from its resemblance to a boot jack when standing out from the trunk of the tree.

In the engraving three palms are shown of this variety, the center one being

covered with the "jacks" throughout almost the entire length of its trunk. As the tree grows older the "jacks" in turn fall off, and leave ring-like markings upon the bark to show their original position. The view showing the three palms is looking out upon the Halifax River in the vicinity of Daytona.—(Fig. 1.)



FIG. 3.—A PALM GROVE AT ROCK LEDGE.

The tree presents a more handsome appearance when the trunk is smooth, as will be noticed in a picture of the group taken from a grove near Jupiter Inlet. One of the most beautiful groves of these palms along the river is at Rock Ledge, where there is a large hotel owned by the Dwyer Brothers, proprietors of the well-known resort at Long Branch. This splendid grove I have thought worth while to reproduce from a photograph as showing the finest specimens I observed anywhere of so large a number of these trees growing together. I think they vary from 30 to 40 feet in height.—(Fig. 2.)

I spent several days at Daytona, which is situated upon the main land upon ground rising six to eight feet above the water of the river, and in the rear of which lies a hammock, or, in other words, a swamp, where a considerable portion of the forest has been cleared and set to oranges. There are a great many live oaks in this locality, both along the shore and in the hammock, where they are interspersed with the cabbage palm, ash, and various evergreens. The live oak is a very hard and valuable wood, as its name indicates, of the oak family, but always green. It drops its leaves, however, in the Fall and early Winter, its greenness being due to the fact that new leaves are constantly growing as the old ones disappear. With the ash and hickory, however, which I saw in the same vicinity, this is not the case, the leaves falling all at once and leaving the tree naked, as with their brethren at the North. From this circumstance it has been supposed by some casual observers that the Spanish moss, a parasite which grows upon the branches of these trees, always attaches itself to dead limbs. The fact is, the limbs look dead because stripped of their foliage and seen by Northern visitors in Winter



FIG. 4.—A JUNGLE OF LIVE OAK AND ASH.

only. In the picture which shows the live-oak jungle, the moss may be detected hanging from the branches of a large ash tree from which the leaves have practically disappeared. It also is fond of growing about the live oak, whose foliage is thinner during the Winter than at any other time, at which season the moss is naturally more prominent.—(Fig. 4.)

The live oak is by far the most important of the hardwood trees in this region, and usually grows straight and stately. Along the water edge, however, it is sometimes badly bent by the prevailing east winds. In the picture is shown a

specimen of this variety, which leans at almost right angles across the road which passes along the shore of the Halifax River at the village of Daytona. It is a well-known landmark in the vicinity, and no doubt will be recognized by many Northern people who have visited that region.—(Fig. 5.)

At Daytona we took a steamboat and passed south down the Halifax River through the Hillsborough and Mosquito Lagoon to Rock Ledge, on the Indian River. It may be remarked in passing that the Halifax, throughout its entire length of 28 to 30 miles, is not far from a half mile in width and about a yard deep.

The distance from Daytona to Rock Ledge by boat is about 85 miles. At the latter point we took another boat and started down the Indian River to Jupiter Inlet, in Dade County, 130 miles to the south. We now entered a region where the cultivation of the pineapple has begun to attract a good deal of attention, and where the mangrove begins to line the banks of the waterways. This part of Florida is much newer than the region north of Daytona, and less is seen of orange groves, and more and more of a different variety of vegetation requiring a warmer sun. In spite of the fame of the Indian River orange, there is a popular belief among the natives that this fruit will not do well on the lower river. I have found nothing to carry out this opinion, but think it rather due to the fact that the natives have turned their attention to other matters and not to the laborious and expensive calling of orange growing. The first cultivation of the pineapple was begun at a place called Eden on the Indian River, but now there are many plantations being opened up, and the crop numbers many thousand boxes, which find their way each year to the northern market. The product may also be said to be rapidly and steadily on the increase.

The pineapple culture is more to the liking of many people than orange growing, because, for one thing, a crop may be gathered without waiting so long as in the former case.

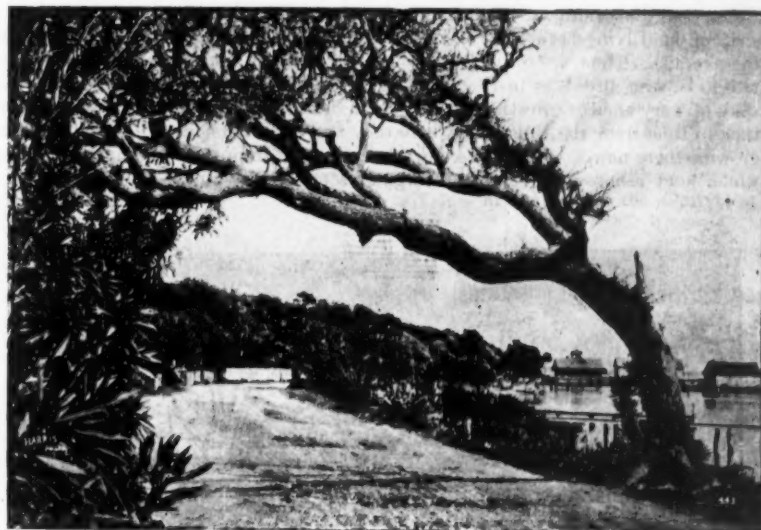


FIG. 5.—LIVE OAK AT DAYTONA.

The land upon which the pineapple grows seems to be pure sand, although it doubtless contains a vast amount of broken coral and shells washed up by the action of the ocean. The sandbars and islands along the eastern coast of the peninsula are best adapted for this fruit. This land, until recently worthless, costs usually from \$50 to \$100 an acre since it has been found that pineapples will grow upon it. It is cleared by brush hooks and grubbing hoes of its dense growth of palmetto scrub, at a cost of \$50 to \$60 per acre, and it is never plowed but scratched over with a ground rake, being strewn with commercial fertilizer at the rate of one-half ton per acre every six months. The plant is propagated by means of a slip which is put into the ground, formerly about 20 inches apart after the manner of tobacco plants. Recently, however, the tendency appears to be to plant them closer together, putting in as many as 10,000 or even 12,000 plants to the acre. It is found that by this arrangement the plants hold each other up. Then, too, the flying sand does not get into the heart of the plant and injure the fruit, the ground being protected from the wind.

When the slips have been planted from 22 to 24 months the crop is mature and ready for market. The pines, as they are called, are cut from the heart of the plant which dies. At the same time five or six new slips grow from the stalk, while one shoot comes from the ground, which is called the "sucker." The slips and remains of the old plant are removed and the sucker develops another apple, or pine, as it is called, in about 18 months, while the five or six slips which are cut off and transplanted each matures a new plant and ripens as before in a little under two years. These periods for fruiting apply to the bulk of the crop, which is ready to harvest early in the Summer. The fact is, however, that some plants are continually bearing so that when a plantation, is well under way there is fruit ripening every day in the year to a greater or less extent. The cut shows a field with the fruit getting ripe.—(Fig. 6.)

The pineapple, by the way, is a native American, although it has been cultivated throughout the tropical world so long as to have almost lost identity with its original habitat. Constant improvements are being made upon it, and fine varieties are being introduced into Florida from the West Indies and other parts of the world. The yield of a field of pineapples usually is worth at ruling prices from \$500 to \$700 an acre, although I saw one field last year of an extra variety for which its proprietor refused to take \$950 an acre as they stood, preferring to harvest them and send them North in cases.

It will be observed from the picture that the pineapple is a sort of cactus; a plant with a very short stalk, in the center of which the fruit is produced. It resembles very much a small aloe. The leaf is thick and pulpy, and in the ordinary variety there is a row of sharp thorns along each edge. In some of the finer varieties introduced from the West Indies the edge of the leaf is smooth, and the leaf itself is much thinner and softer.

Reference having been made to the aloe, I will call attention to a fine specimen of it shown in the foreground of the accompanying picture of a group of palms growing near Jupiter Inlet. These aloes, commonly called the century plant, are found in this vicinity frequently upon the shell heaps. From the center of this plant a pole-like stem shoots up to the height of 15 or 20 feet, upon which the blossom, a small flower, appears in clusters all around the upper part of the stem for a foot from its top. I saw several fully-developed plants close to Jupiter, and in the stalk of one a woodpecker had bored his hole and made his nest.

I cannot close without something about the cocoanut tree and its fruit. I saw no cocoanuts north of Lake Worth, although the tree will grow, it is said, higher up on the peninsula, but does not bear. Lake Worth, as has been said before, is a sound, but occasionally for a brief period it is a true salt-water lake. This comes from the closing of the inlet by the washing up of the sand by eastern storms. The lake is some 22 miles from north to south by a mile in width, and lies between the 27th and 28th degrees of north latitude. It is wholly in Dade County, to the southeast of Lake Okeechobee. The beach, as it is called, is a strip of land lying between it and the ocean, not far from a half mile in width on the average. Here are to be found some of the finest specimens of the cocoanut tree to be seen anywhere in Florida. So far as I was able to learn there are no trees of very ancient growth there, although nuts must have washed ashore from time to time from the Bahamas, where they are very common. Most of the trees growing there now, however, are known to have come from the wreck of a schooner which went ashore in 1875 with a cargo of some 35,000 nuts.—(Fig. 7.)



FIG. 6.—A FIELD OF PINEAPPLES FRUITING.

The cocoanut, when young, resembles very much the date palm, both having pinnate leaves growing in a row upon each side of a long mid rib. In the case of the date palm the leaves are stiff and sharp, more like the leaf of the Spanish Bayonet; in the case of the cocoanut the leaves are more pliable and move in the wind. The mid rib, or stem, of a cocoanut leaf often reaches the length of 15 to 20 feet, and the whole has the appearance of a gigantic feather. The weight of so long a leaf would, of course, lead to its rapid falling off as the trunk grows; but this is prevented until the leaf has matured by a ligament which is firmly attached for about one and one-half feet at the butt end of the rib at the edge, passing like a band around the trunk of the tree. This material is very strong, and is often used as a substitute for heavy wrapping paper when cut off the butt of the leaf stem at each end, while the fiber is capable of making strong ropes.

The nut grows in heavy clusters at the base of the foliage and the tree begins to bear at from five to seven years of age. It produces from 60 to 150 nuts a year. When dropped they are of an oblong triangular shape covered with a hard, smooth husk. This husk when taken off discloses a rough shell covered with

coarse fibers, and in this condition it appears in market and is known as the cocoanut of commerce. The nut with the husk is from one foot to 16 inches long and half as wide. In the accompanying picture there is shown a fine example of a cocoanut at Lake Worth, the tree in the foreground bearing a heavy crop, while in the rear is shown the young tree. The nuts are sprouted by being covered in a trench, where they are kept moist, and sometimes it requires four or five months for them to show signs of life. On the other hand, I saw at Lake Worth a nut which had sprouted while simply lying neglected for a few weeks upon the ground under its mother tree.



FIG. 7.—A COCOANUT TREE AT LAKE WORTH.

No forest can be more beautiful by day or more weird at night than a cocoa grove. I happened to pass through a splendid forest of these trees one night when the moon was full and the sky as clear as it can only be in the tropics. A gentle breeze was blowing, and I was almost startled at the curious shadows. The long-pointed leaves cast so black a mark on the grass that as the long plumes of the tree swept back and forth it looked as though a thousand witches' fingers were scratching the ground. It was an effect never to be forgotten.

Then, too, how the cocoa can roar in a storm. Nothing I have heard in the North can equal it for a steady deafening thunder-like roar which resembles nothing I know of but the angry ocean.

Had I space I could describe other interesting trees little known by our Northern readers, but which abound in the region of which I am writing. Suffice it to say that on the narrow strip of land between Lake Worth and the Atlantic I saw the torchwood, blackwood, ironwood, the mastie, the American banyan or wild Indian fig, the wait-a-bit thorn and several others not to be found elsewhere in the United States.

Olive Oil.

A writer in the *Rural New Yorker* says the amount of olive oil imported into this country annually is about 800,000 gallons, about one-quarter of which is pure, the rest being adulterated with cotton-seed oil before importation.

The olive oil of California is mostly consumed in that State, and the producers have an organization to prevent adulteration, and it is said that there is more real olive oil consumed in Santa Barbara than in New York. The Italians are great consumers of olive oil, using it as freely as we do butter, and much in the same way.

The lovers of the peculiar flavor of true olive oil prefer the California product to any other.

PROGRESSIVE AGRICULTURE.

The Most Recent Discoveries, Developments, and Ideas in the Science of Farming.

Rocks in their Relation to Agriculture—Origin of Rocks.



HE farmer is apt to look on rocks as material for building or as obstructions to the plow, to be removed as inexpensively as possible. But if he could look backward a few million years and see the earth as it then was his ideas of the functions of rocks would be greatly enlarged. It is not best to push the retrospect too far and inquire into the actual origin of rocks. In antiquity too remote for human conception we may imagine the materials of which the rocks are composed as existing in a gaseous state, due to the intensely high temperatures pervading the solar universe and maintaining all matter in a nebulous state. But we will not try to extend our view beyond the time when the planet on which we live had assumed its present state and general outline. It is thus seen that the original rocks were formed by the cooling of gaseous and molten material, and were, therefore, quite unlike the rocks which abound at or near the earth's surface at the present time.

From a geological point of view the whole of the earth's crust, no difference what its state may be, is included under the general name of rock. Solid masses of granite or marble, loose beds of sand or clay, and deposits of peat and coal are all rocks in this sense of the term. As noted above, all rocks were originally of igneous origin; that is, formed by the cooling of molten masses of material. These cooled masses would naturally consist of materials of many kinds. The structure of the rock might have been amorphous (non-crystalline), or more or less crystalline according as the cooling had been rapid and slow. Rocks of the first class may yet be seen as solidified lava, which may be so quickly cooled on emerging from a volcano as to be entirely free of any trace of crystalline structure. Such was the raw material on which Nature had to work to fashion into shape the crust of the earth. It required inimitable patience and skill to dissolve, sift, classify, and mold into homogeneous heaps this raw material. Nature made use of many agencies to secure this result. Wind, water, heat, cold, chemical action, and selective affinity were all called on to help in the great work. First of all these refractory masses had to be dissolved. Afterward the various materials of which they were composed were sorted, particles of like kind coming together. Finally these homogeneous particles had to be cemented into the forms in which we see them now.

But this is not all. The rocks, once formed into what by comparison may be called modern form, were not yet ready to yield their nutritious particles to the growing plant. There was still a long period of decay to be awaited. The disintegrating forces had yet a second task to perform and to prepare the rocks for vegetable growth. We can have no adequate conception of the long ages which elapsed while these changes were going on. The historic age of the world is so short in comparison that it cannot even serve as a unit to measure by. If we would attempt to dip the ocean dry with a pint cup, it would be doing a task as hopeless as trying to measure geological ages by means of historic time. We are apt to regard the rock as typical of indestructibility, yet even the most refracting rocks are continually undergoing changes, whether exposed on the earth's surface or covered deeply below. Even marble and granite wear slowly away. The temples and statuary which have remained from past historic times are defaced and wasted. In two or three thousand years their surfaces have been deeply eroded. They have come from climates where rock decay is comparatively slow, as it is in Italy, Greece, and Egypt. Cleopatra's Needle has suffered more in a dozen years in Central Park than in a century in the Valley of the Nile. They are trying to preserve its hieroglyphics by keeping it covered with paraffine and other protecting coatings. The Houses of Parliament, on the banks of the Thames, are rapidly crumbling. Already the work of restoration is in progress. Even the Washington Monument is gradually wasting away. Should no cataclysmal accident destroy it perhaps it may last 10,000 years; but it cannot forever resist the gnawing tooth of time. The tomb of Aristotle was discovered buried beneath many feet of detritus. So every work of stone built by human hands tends gradually to sink beneath the crumbling attrition of time. In a few brief articles I desire to set forth the most modern views respecting rocks in their relations to soil; to study briefly their composition and classification, and finally to trace the processes of their decay. The day has passed when only the chemist, geologist, and mineralogist absorb all knowledge of rocks and soils. Now is the time when the farmer himself is asking questions concerning the soil which he tills—questions which not only show his desire for knowledge, but also his search for the fundamental principles of the science of agriculture.

Blindly in days past have men cleared forests, broken prairies, and plowed the fertile earth without respect of the natural rights of the field. Modern science has given a new meaning to the phrase "agrarian rights," and in these papers we hope to establish the foundation of the ethics of the field.

The Materials of Which Rock are Composed.

Chemists have discovered that there are nearly 70 kinds of elementary mat-

ter existing in and on the earth. There are doubtless many undiscovered elements. When it is remembered that chemistry as an exact science is but little over a hundred years old, we must not chide it for not having entirely completed its investigations. The ideas which have been advanced to the effect that there is only one kind of matter, and that all so-called elements are only forms of this original element, are purely hypotheses, which yet await proof. Of all these forms of matters there are less than 20 which are of interest from an agricultural point of view. These important elements will be briefly described. The order in which they are mentioned shows approximately the relative abundance in which they exist; but it must be remembered that it is not always possible to state definitely that this or that element occurs in the greater quantity. The classification, therefore, may not be strictly correct, but is at least apparently so. Below they are placed in two classes, viz., metalloids and metals.

THE METALLOIDS.

Oxygen.—The first element in this that claims attention both on account of its importance and abundance is oxygen. The term oxygen is derived from two Greek words, meaning acid former, because the early chemists thought it to be the essential ingredient of all acids. Oxygen forms eight-ninths of the weight of water, half of the weight of the earth's crust, and one-fifth of the weight of the air. In the earth and water it exists in chemical composition with other elements; but in the air it exists in a free state, mixed mechanically with nitrogen. It is, in a free state, colorless, odorless, and tasteless. Combining with carbon and organic matter it produces the phenomena of combustion, while in slower action it is the most active principle in the processes of decay. Oxygen combines with every other element chemically, save, perhaps, fluorine. It is the chief agent in nearly all chemical reactions, which consist chiefly of oxidations and deoxidations. In its free state it is the supporter of respiration in all animals, while combined with carbon it forms one of the chief materials of plant growth.

Silicon.—Next to oxygen the most abundant of the elements in this group is silicon. It forms the acid part of all clays, and, united with oxygen, makes sand or silica. In weight silicon is more than one-quarter of the earth's crust. It never exists in a free state in nature. It provides an essential ingredient of plant food, silica being always found in the ash of vegetable matter. But silica is more important to plants as a matrix, in which their roots grow, than as a food. Much of the agricultural value of a soil depends on the relative proportion of free silica to clay or silicate of alumina. Silica is extremely insoluble, yet plants are able to dissolve enough of it to supply themselves. The alkalies also assist in the solution of silica.

Carbon.—Next in order of abundance is carbon. This element exists in a free state, as coal, graphite, and diamond, but in this form it has no agricultural value. Combined with oxygen and lime it forms limestones, shells, and marble. In organic composition it supplies humus to the soil. In the air it exists in combination with oxygen as carbonic dioxide, commonly known as carbonic acid. In this form it is the most abundant and necessary plant food, more than 90 per cent. of all plants being formed of carbonic dioxide and water. Woody fiber, starch, sugar, etc., are chemical combinations of carbonic dioxide and water—combinations, however, which are produced in the plant by a series of condensations which have not been imitated in the laboratories of chemists. Carbon constitutes about one-fifth of the weight of limestone and a little less than one-half of sugar, starch, and wood fiber. In respiration a large part of the inhaled oxygen combines with carbon and is exhaled as carbonic dioxide. Carbon in its free state is totally unassimilable by plants. The carbon in peat is also quite inert, but becomes valuable when in the form of humus.

Sulfur.—In the free state sulfur is found in large quantities, especially in volcanic regions. In combination with iron it exists abundantly as pyrites, a mineral, which on account of its luster and color is often mistaken for gold.

As sulfates it occurs in great quantities chiefly as lime sulfate, commonly known as gypsum or land plaster. It is in this form that sulfur is most useful to crops. Sulfur is a common ingredient of plant structure, and can be easily detected when the plants are burned in such a way that the sulfur is all oxidized to sulfuric acid.

Hydrogen.—This is the lightest known element, being more than 14 times lighter than air. Balloons filled with hydrogen have a greater lifting power than when inflated with illuminating gas. This gas occurs free in the gases from volcanoes. Some metals have the power of condensing large quantities of hydrogen in their pores. Palladium is a metal of this kind.

Like oxygen, it has neither taste, color, nor odor. Hydrogen occurs most abundantly combined with oxygen in water, of which it forms one-ninth by weight and two-thirds by volume. Water is the condensed smoke of burning hydrogen. Uncondensed it is steam. When two volumes of hydrogen are mixed with one volume of oxygen the most violently explosive gas known is produced. Hydrogen is an essential constituent of plant substance. It comprises about one-thirtieth by weight of wood fiber, sugar, starch, etc. Hydrogen occurs, also, as one of the chief ingredients of natural gas, in which it is found both in a free state and combined with carbon. United to carbon it forms petroleum and other hydrocarbons.

Chlorine.—This element is rarely found free in nature in gaseous emanations from the earth's interior. United to sodium it occurs as common salt, both in solution in sea water, etc., and in mineral deposits, known as rock salt. Combined with metals it forms that class of bodies known as chlorides, of which the most important is the chloride of sodium mentioned above. When chemically combined with hydrogen it makes hydrochloric acid, which absorbed by water gives the so-called muriatic acid of commerce. Chlorine is also universally found in the

ash of plants, and is one of the most widely distributed of the elements. It is even found as chlorides in snow and rainwater.

Phosphorus.—This is one of the most important elements from an agricultural point of view. Its name is derived from two Greek words, and means light carrier. The name indicates the luminous character of the element, or, in other words, its power of emitting light. Seen especially in the dark. As far as known it never occurs free in nature. It is found in vast quantities combined with lime in phosphate minerals and rocks and the mineral matter of bones. Phosphorus is essential to plant life. It is found in all parts of plants, but especially in the seeds. Calcium phosphate is quite insoluble, but the rootlets of plants contrive in some way to dissolve enough for vegetative purposes. In this country practically inexhaustible quantities of phosphates are found in South Carolina and Florida. There is not a cubic foot of soil in the whole country which does not contain an appreciable quantity of phosphorus. It is found in minute proportions in many minerals and rocks, but it is difficult to account for its very even distribution through the soil. It is the prime ingredient of most of the chemical fertilizers used, and is especially valuable when applied to certain crops, such as the cereals. The phosphorus in commerce is usually made from bones, and in the form of round sticks is kept under water to avoid too rapid oxidation.

Fluorine.—This element is not of great importance, but is found in some plants. It does not occur free in nature, and is obtained in a free state only with great difficulty. It attacks and dissolves silica, glass, and many other bodies with the greatest avidity. It unites with hydrogen to form an acid which, when dissolved in water, is used for etching on glass and other purposes. Combined with metals it forms fluorides, and it is found abundantly as calcium fluoride. The fluorides are excellent antiseptics, preventing in a marked degree some kinds of bacterial growth, while not interfering much with others. It is perhaps the only element which does not combine with oxygen. As fluoride of calcium it is found in considerable quantities in most phosphatic deposits.

METALS.

Aluminum.—Aluminum stands pre-eminently of first importance of all other metals in respect of soil making. Next to oxygen and silicon it is the most abundant constituent of the earth's crust, of which it is estimated to form one-twelfth by weight. Aluminum is a white metal, resembling silver in color. Its specific gravity is very low, it being only about two and a half times as heavy as water. The metal possesses many valuable qualities, being strong, lasting, and extremely resonant. Only the cost of obtaining it pure prevents it being largely used in the arts. Could it be secured as cheaply as iron it would take the place of the latter element in bridge building, ship making, and many other ways. In the last few years the price of producing it has greatly decreased; but still it costs from 20 to 50 times as much as iron. Alloyed with copper and silicon it forms a numerous series of bronzes which have many valuable properties. On account of its resonance it may become useful in the manufacture of musical instruments. I have seen violins made from it which were quite as light as those made of wood. It is difficult to say now how rapidly its use in the arts will increase. Its promises during the past few years have been over sounded, and it will hardly meet the expectations of its enthusiastic advocates. Nevertheless, a future of wide usefulness must be expected of it. The oxide of aluminum occurs combined with silica in that large class of bodies of which ordinary clay is typical. The silicates of alumina form the chief part of many minerals and the great mass of soils known as clays. The term clay, however, in soil descriptions is not synonymous with silicate of alumina, but rather embraces all the very fine particles found in a soil. A very pure hydrated silicate of alumina occurs as kaolin, which is used in the manufacture of fine pottery and porcelain.

The clay of soils is derived from the decomposition of argillaceous silicates. The more soluble portions of the decomposed minerals are carried away by the water, and the clays are thus rendered quite homogeneous in structure. The name aluminum is derived from a latin word meaning "nourishing," probably because of clay-supporting vegetation, though some authorities claim that it was due to the habit of very poor people eating certain clays as a part of their food. The uses of clay, aside from its agricultural relations, are numerous. The potter finds it his chief stock in trade, and the builder uses it extensively in his work.

Calcium.—Only a little less important agriculturally than the preceding metal is calcium, named from the latin word *calx*, a stone. Calcium is supposed to constitute about one-sixteenth of the earth's crust. It is found most abundantly in combination with carbonic acid, forming the calcium carbonates of the earth's crust, of which limestone, marble, and shells are examples. It can only be obtained in the metallic state in small quantities and at great expense. Metallic calcium is probably the most expensive substance in the world. The carbonate of lime is almost indispensable to vegetable growth in all ordinary soils. Especially soils containing large quantities of decaying vegetable matter require large quantities of it in order to neutralize the acids which are formed. The vegetable acids decompose the carbonate, setting free carbonic dioxide.

The processes of nitrification, by means of which albumenoid and other nitrogen-holding bodies are rendered assimilable by plants, requires the presence of a considerable quantity of carbonate of lime. Where the carbonic acid is driven off from this compound by a high and sufficiently-prolonged temperature quicklime is produced.

Quicklime takes up a certain portion of water in chemical composition, and thus becomes slaked lime. Lime when applied to stiff lands produces a loosening effect on them, called flocculation, which renders them much more valuable for agricultural purposes. Lime, however, should not be applied too freely to land containing organic matter, because it promotes the escape of ammonia, which is one

of the most valuable of plant foods. An easy test to show the presence of carbonic acid in air expired from the lungs consists in blowing this air through clear lime water. The lime is at once precipitated as calcium carbonate and the water becomes milky.

Magnesium.—This is a much less abundant element than calcium. It does not occur free, but is readily obtained in the metallic state. The metal does not easily oxidize at room temperatures, but when ignited easily takes fire and burns with a dazzling white light. Magnesia is quite a common constituent of the ash of plants. It occurs with calcium in the mineral dolomite, which is a calcium-magnesium carbonate. It is also a fundamental constituent of the mineral serpentine, soapstone, and talc. Its most common commercial salt is the sulfate, known as Epsom salt.

Potassium.—Less abundant but of far more importance to the farmer is potassium, named from potashes. It is a metal lighter than water, having a beautiful bluish color, tarnishing at once when exposed to the air. To prevent oxidation the metal must be kept under a mineral oil, such as naphtha. The potash in the soil has its origin chiefly in the decomposition of silicates containing it. Orthoclase, a kind of feldspar, may be taken as a type of these silicates. Potassium is an essential ingredient of plant food, vegetable growth being practically impossible without it. It forms an essential ingredient of the ash of all terrestrial plants. Potash salts, chiefly in combination with chlorine and sulfuric acid, occur in large deposits in various quarters of the globe, the chief of which are situated near Stassfurt, in Germany. Nearly all the potash used as fertilizer and in the arts comes from that locality. Potash is especially valuable when used with maize and root crops, and its importance as a plant food is just beginning to be appreciated in this country. Saltpeter is a salt formed by the union of potash with nitric acid.

Sodium.—This metal is also lighter than water, and is preserved in its metallic state in the way described for potassium. Sodium is of more importance to marine than to terrestrial vegetation, but it is not devoid of agricultural interest. United with chlorine it forms common salt, existing in solution in sea water and in solid deposits as rock salt. The compounds of sodium found in sea water and in the soil are derived as the potassium salts are—from the decomposition of silicates. In some dry regions, as in Chile, vast deposits of sodium are found in combination with nitric acid, known as soda saltpeter or Chile saltpeter. These deposits are of the greatest agricultural value on account of the nitrogen which they contain.

Iron.—This element occurs in a free state in meteorites and in some basaltic rocks. In combination it is widely distributed, forming the coloring matter in many minerals and in soils. The properties of metallic iron are so well known that it would be useless to describe them here. Agriculturally iron is of great importance. Soils heavily impregnated with it are usually capable of great development. The rich, red color of clay is due to its presence. It is an important ingredient of plant food, but is used by plants only in minute quantities. Its chief value is probably in its modifying influence on the physical properties of soils. In the form of sulfate (green vitriol) it is sometimes used as a fertilizer. The principal ores of iron are oxides, called magnetite, and hematite. Combined with sulfur it forms the well-known mineral with gold-like color known as pyrites. Steel is iron with small quantities of carbon and manganese united with it.

Manganese.—This element has very little agricultural value, but is often found combined in small quantities in the ash of plants. Its principal minerals are oxides, and are called pyrolusite, psilomelane, and wad.

Barium.—This element does not occur free in nature, but principally combined with sulfuric and carbonic acids. The first-named combination forms the mineral barite and the second witherite. These minerals have a high specific gravity; hence the name of the element from a Greek word, meaning heavy.

Boron.—This element is found chiefly in the form of borax, and its occurrence in the ashes of many plants leads to the conclusion that it is quite widely distributed in minute quantities and has a slight agricultural value.

The above list includes all of the elementary bodies that have any important bearing in the constitution and function of soils. Many others are found in the soil, but it is not believed that their presence has any relation to plant growth. And to the farmers plant growth is the great factor to be kept in view, even when considering the origin and constitution of the earth's crust.

The Compass in the Watch.

A few days ago I was standing by an American gentleman, when I expressed a wish to know which point was the north. He at once pulled out his watch, looked at it, and pointed to the north. I asked whether he had a compass attached to his watch. "All watches," he replied, "are compasses." Then he explained to me how this was. Point the hour hand to the sun, and the south is exactly half way between the hour and the figure XII on the watch. For instance, suppose that it is four o'clock. Point the hand indicating four to the sun, and XII on the watch is exactly south. Suppose that it is eight o'clock, point the hand indicating eight to the sun, and the figure X on the watch is due south. My American friend was quite surprised that I did not know this. Thinking that very possibly I was ignorant of a thing which everyone else knew, and happening to meet Mr. Stanley, I asked that eminent traveler whether he was aware of this simple mode of discovering the points of the compass. He said that he had never heard of it. I presume, therefore, that the world is in the same state of ignorance. Amalfi is proud of having been the home of the inventor of the compass. I do not know what town boasts of my American friend as a citizen.—*London Truth.*

THE HONEY BEE.

The Wonderful Ingenuity Employed by the Busy Workers of the Hive.

BY PROF. GEO. G. GROFF, M. D.
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OF THE student of Nature, the means by which living beings reproduce their kind is always a subject of interest. In the case of the honey bee, this is peculiarly so from the wonderful instincts of the insect and the wonderful provisions made for the preservation of the species.

Bees are oviparous, that is, egg-laying insects. These eggs in due time, under the influence of warmth, hatch into worms, also called grubs, larvae, or caterpillars. These grubs after a time spin an enveloping web or cocoon and pass into the quiescent pupæ, which after a variable time become the imago, or perfect insects. The adult honey bee has always passed through all these stages, viz., the egg, the worm, the pupa, and the perfect insect.

The earliest mention I find of any person knowing the true method of bee reproduction is that of Joseph Warden, physician, of Corydon, England, who in 1617 published a curious and interesting little book on bees, entitled "The Feminine Kingdom, or the True Amazons." In this book he tells us that the queen is the one female in the colony, and that she is at once the ruler and the mother of all within the hive. Butler, an English beekeeper of an earlier date, seems also to have had a correct view of the same matter. Recent students have cleared the matter up, and we are now able to understand quite fully what so long puzzled our predecessors.

We will first consider the origin of the queen, then of the workers, and, last of all, of the drones. The queen is produced by two methods, which may be termed the ordinary and the extraordinary methods:

First. In a strong colony of bees, in the months of May and June, and sometimes later, there will usually be found large reticulated cells, which on the exterior look much like ground or peanuts. These cells are generally placed at the ends of the combs, though they are often found on the sides of the same. They have thick walls, and an internal cavity much greater than that in either worker or drone cells. A peculiarity of the queen cells, for so these are called, is that the mouth opens downward, while all other cells in the hive are horizontal.

This arrangement is doubtless made that more room may be secured for the cell, for naturally the cells are placed too close together to build the queen cells in the ordinary horizontal position. At any rate, queens will hatch from cells placed horizontally. In these cells eggs are placed, by what member of the colony is not known for certain. A single egg is placed in each cell, some say by the queen, others think by the workers. A number of careful observers have declared that they have seen the queen in the very act of depositing eggs in these cells. No one doubts that the queen lays these eggs. In time they hatch into young queens. If the colony is strong and the weather is favorable, the young queens will be ready to emerge in 16 days from the time the eggs become worms.

However, if the workers are not ready for the new queen they will confine her in her cell, feeding and caring for her there. Under favorable conditions, about eight days before any young queen will hatch out, the old queen leads off a portion of the bees to form a new colony, leaving the old home for the new queen, who will in a short time fully replenish it with bees. So soon as the young queen emerges from her cell she makes a tour of the hive, and finding any queen cells, unless prevented by the workers, proceeds to tear them open and to destroy the immature queens. In case the workers prevent this destruction, a second swarm is given off, led by the newly-hatched queen. It is a curious fact that the queen bees do not spin a complete cocoon, but leaves one end open, which makes her destruction very easy to any rival. About the only use the queen makes of her sting is to destroy her rivals with it. If the weather becomes bad and the honey flow ceases, the workers frequently destroy all the queen cells, thus preventing all

swarming for the season. On this plan all modern beekeepers prevent all second swarms by opening the hives and cutting out all the queen cells.

Second. Should the queen of a healthy colony be lost through any accident, there being in the colony worker larvae not over three days old, the workers will select some of these worms, destined in the ordinary course of things to become worker bees, and by enlarging their cells by assiduous attention, feeding them almost constantly upon a peculiar substance called "Royal jelly," will produce in due time a number of healthy young queens, one of which—the first to hatch—becomes the leader of the colony. This important discovery, that the queen proceeds from a worker egg, was first announced by Schirach, a Saxon clergyman, in 1771. (It is an interesting fact that nearly all of the great discoveries in bee reproduction have been made by clergymen.) On this discovery depends the modern methods of queen rearing by which queens are now produced in every modernized apiary the world over, many beekeepers making artificial queen rearing an exclusive business. Though the queen hatches in 16 days, the drone requires 24 and the workers 21 days. The shorter period is probably due to the much more abundant and the richer food supplied to queens. Also because she has a more roomy cell in which to develop.

If the weather is favorable, on the third day from the cell, the young queen goes forth on her "bridal tour," and in a few hours, if she is successful, she returns bearing with her the organs of the male who has perished in the act of impregnation. If the third day is cloudy or wet she goes forth on the first favorable day, and she continues to go forth day after day until she is successful. The queen is always (some object to this) fertilized in the open air while on the wing, and but once in her life. This was first announced by the blind naturalist Huber at the close of the last century.

The fertilizing element received from the male is stored in a little receptacle, and a minute portion of it is ejected as the eggs pass down the oviduct, thus fertilizing them. The queen bee in her prime may lay from 2,000 to 3,000 eggs in a single day. Her second year is generally thought to be the most prolific, and after that she gradually declines in value. The queen lays such large numbers of eggs, however, only during the busy season of the year, when honey is coming in rapidly. During the Winter months, and during a sudden cessation of the honey flow, she ceases to lay almost entirely, though I think that a few eggs and worms will be found, at most times in vigorous colonies. This is a wise provision to protect the colony from destruction through loss of the queen.

When a queen has grown old, and is no longer very prolific, the workers see that a new one is reared, and the old one is then "superceded," though occasionally the old and the young queens have been seen living in harmony in the same hive, and actually at the same time, on the same comb. Some beekeepers think that the workers will, unaided, attend to the destruction of feeble queens, but at present a large number of the more progressive apiarists prefer to do this themselves, thus insuring at all times, to all their colonies, young and vigorous queens. This is one important particular in which modern beekeeping differs from the old.

The eggs of the bee are hatched by the united heat of the colony. The interior of the hive is always warm, even in the dead of Winter, and hence, when the number of bees in a hive becomes small, the colony perishes, being unable to maintain the requisite degree of animal heat. Hence, also, the reason why bees increase only by swarming.

If the queen bee fails to become fertilized before she is 21 days old, she remains through her life sterile. This was first observed by Huber. In 1845 Dzierzon, a Catholic priest of Germany, observed that young queens not fertilized and old, nearly exhausted queens, alike laid eggs, all of which hatched only drone bees. After repeated observations Dzierzon announced the discoveries and a theory, that of *parthenogenesis*, which, in short, is that some animals have, under peculiar circumstances, the power of bringing forth young without the intervention of the male. In the case of bees, these unfertilized eggs hatch only into drones.

Mr. Langstroth, about 1851, sent an old drone-laying queen to Dr. Joseph Leidy, the renowned scientist, who found that the receptacle in which the male element is stored was entirely empty. The same observation has been made by competent persons on young drone-laying queens. It seems, then, that a queen can lay eggs which will produce queens, workers, or drones.

The queens come from ordinary worker eggs, laid in special cells, and attended with special care. The workers come from fertilized eggs, laid in the smallest-sized cells in the hive, while the drones come from unfertilized eggs. It would seem that the queen can, whether she shall, have worker or drone progeny, she voluntarily discharging the male fluid upon the eggs as they pass down the oviduct, or withholding it. This point is, however, in dispute, some believing that the small worker cell compresses the body of the queen, and that this pressure opens the mouth of the vessel containing the male fluid. Be that as it may, the queen can also lay drone eggs in worker cells and worker eggs in cells which have only just been commenced, and where this pressure cannot possibly be exerted.



A, hind leg of honey bee; B, hind leg of bumble bee.



A



C



B

A, queen; B, drone; C, worker.

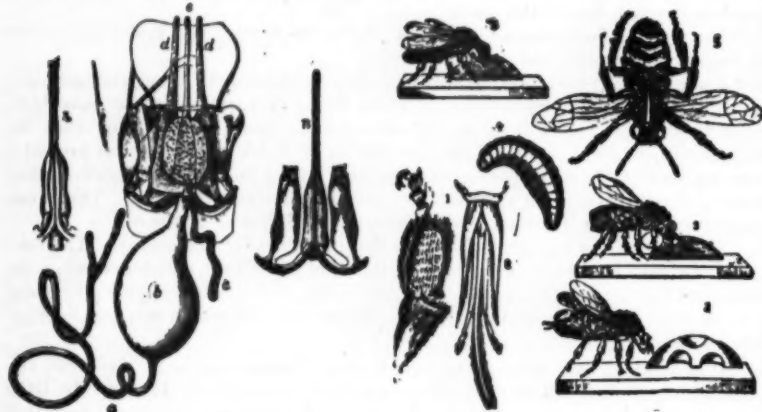
The workers hatch in 21 days. A careful microscopic study of their sexual system (first made in the time of Huber, and for him) shows them to be partially developed females, the sexual organs being very rudimentary. Here rests the possibility of developing any worker worm into a queen, if it is only taken early enough and subjected to the proper conditions which have been already explained. And here is a most wonderful phenomenon, first observed by Reim in the last century. In colonies long queenless it will sometimes happen that a worker will begin to lay eggs, but these eggs always hatch into drones. This is another form of parthenogenesis, an imperfect female bringing forth young without aid of the male. These fertile workers have often been studied in recent years, indeed are at times a great annoyance in an apiary, so that of their existence and drone-producing power there is no doubt.

The drones hatch in 24 days. They come from cells larger than those of the worker bee, and may be distinguished before hatching by the capping over the larva, which is, in the case of drones, always strongly convex, while it is flat for workers. Drones are only found in good colonies during the Summer months; but should a colony be queenless, they may be found in the Autumn, or even in the Winter, being preserved in such colonies to fertilize the hoped-for queen—a most wonderful illustration of instinct. Also, if the queen is supplied with only worker comb, she will insist in depositing some drone eggs, even though in the worker cells.

The object for which drones existed was for a long time a mystery to beekeepers and naturalists. By some they were supposed to be water carriers. By others, the heat producers of the colony. Some supposed that they brooded over the eggs laid by the queen; others that they were without sexual organs, and yet impregnated the eggs of the queen by a vapor which proceeded from their bodies. It is now known that they are fully developed males, and their only use is to fertilize the queen. It may at first sight seem strange that there being but one queen in a colony, and she impregnated but once in her life, so many drones should be produced. This is doubtless a wise provision for the protection of the colony. The queen is the mother of all the colonies. Her loss is a most severe one. Hence, it is desirable that she be exposed as short a time as possible when on her bridal flight.



Mouth organ of honey bee; a, tongue; b, b, labial palps; c, c, first maxillae.



Sting of worker bee; a, poison gland; b, poison bag; c, accessory gland; d, d, outer supporting pieces; e, inner sheath, inclosing sting proper. A, a sting proper; B, sheath in which sting works, seen from below. (After Kraepelin.)

1. Pollen basket of bee magnified. 2. Trunk of bee magnified. 3, 3, 3. Bees constructing cells. 4. Larva of bee magnified. 5. Bee seen through magnifying glass at the moment when the cakes of wax appear between the segments of the abdomen.

The large number of drones in the air insures a speedy fertilization, and hence less danger from birds and other enemies. Drones being produced from eggs unacted upon by the male elements, it follows that a queen being pure bred, she may still be the mother of hybrid queens and workers, while the drones will remain pure. This is an interesting fact. The "massacre of the drones" has long been a matter of interest. Huber declared that in the Autumn the workers made war upon the drones and stung and worried them to death. The truth is, that whenever the honey flow ceases, or becomes scant, the drones are driven from the hives. They sometimes wander from hive to hive until, driven from all, they perish of cold and hunger. They are not stung to death, but rather are worried and bitten and refused food, which they cannot gather for themselves, and so they congregate on the bottom of the hive, or at the entrance, and miserably perish. A favorite point of attack on the drones is at the base of the wings, which are gnawed and rendered useless.

Drones being non-producers in the colony beekeepers have contrived to limit

their production by cutting out all the drone cells and by supplying foundation of worker cells only. In this latter case, the workers will build drone cells in every remaining available place, and the queen will even deposit drone eggs in worker cells, which cells are then lengthened by the workers to accommodate the larger droppings. All this shows the wonderful instincts of these wonderful insects.

WAYS OF THE PANTHER.

The Terror of the Children in the Sparsely Settled Region of Northern New York in Early Times.

A recent article in the *Forest and Stream* describes the habits of the cougar or panther as seen in the forests of northern New York, and I venture to add something further as to the peculiarities of this animal. From 1824 to 1849 my home was in one of the sparsely-settled valleys of that region, and I had frequent reminders of this beast, not only from hearsay, but from my own observation and that of an immediate neighbor.

The cougar (*Felis concolor*) was there called panther or painter and also catamount. Panther was the terror of the children of that region. The legendary "black beast" of the nursery, the bear, though plentiful enough with us, excited no such terror in our minds as did a suggestion that a painter might catch us. To scream like a painter was understood as the most terrific of all screams. In that comparison the pillars of Hercules were reached. But the boys of that region all became hunters as soon as they could carry a gun, and soon outgrew their fears. The stories of the ferocity and monstrous leaps of our panther suffered serious diminution under an actual and frequent observation of the beast.

Some of my earliest ideas about this animal came from being shown the carcass of a sheep lying in the crotch of a big birch tree and about 40 feet from the ground. There was snow on the ground, and it was plain to see that some animal had brought it from a well-fenced yard just across the road from our house. In the yard one lamb lying a few yards away from the other sheep had had the top of his head knocked off by a blow from an animal which had leaped a long distance to strike the lamb, and which had done it no further violence. Several sheep lay dead in the yard and partly eaten. Wolves and cougars had agreed in hunting together; but when it came to the repast the cat-like instinct of the cougar inclined him to take his share into the tree beyond the chance of interference.

Two cougars came one night into the pasture of a farmer living a mile south of us and killed five sheep, carrying the bodies a few rods into the woods, and after eating a part buried the remainder very carefully with a cover of leaves and dirt. The farmer's boys set a bear trap and caught the male cougar the first night. My hunting dog had a habit, if I was not going to hunt, of going to this neighbor's to see if he could get his boys to go, and was there that morning in time to go with them to their trap. The dog, finding the animal in the trap, ran up to it and got such a blow from its paw as sent him some yards away, and the panther snatched a piece of flesh from the dog's shoulder blade, leaving bare a piece of the bone as large as a half dollar, and in that plight he returned to me. That evening at dusk I was in the road half a mile from our house, where I had been to drive the cows to pasture, when the female mate of the captured cougar, starting apparently from the side of the mountain opposite to me and a quarter of a mile away, walked slowly along toward the place where her mate had been killed, and all the way, at short intervals, giving such terrific screams as I had never heard before and as most decidedly hurried my pace toward the house, where I found the family standing in the front yard to hear the same alarming screams which had startled me. Part of her notes seemed those of anger and some of intense grief.

For half an hour she continued her wailings, and then was heard no more. Cougars rarely attack men, but are not easily frightened when confronted. Two of my father's log choppers had felled a pine tree at evening, and next morning approached it from the top, intending to cut it into logs. On the butt of the tree they saw a large cougar lying apparently asleep. The men agreed to give it a big scare and see how far it could leap. They ran along the trunk of the tree and gave a joint scream; the animal simply got up and faced them. They retreated, when the beast quietly got off and waded off through the snow.

A son of mine, traveling in Arizona, camped one night under some trees. After getting his coffee he lay down on his blanket by the fire. Then a cougar jumped down from the tree beside him and made off before the man could use his gun.

Cereal Productions in the United States.

The Superintendent of Census has issued the preliminary statistics of cereal production in the United States, prepared under the direction of Mr. J. Hyde, special agent in charge of the statistics of agriculture. The figures are as follows: Barley, 3,221,099 acres, 78,349,602 bushels; buckwheat, 838,777 acres, 12,130,668 bushels; corn, 72,076,074 acres, 2,124,559,312 bushels; oats, 28,297,272 acres, 809,198,797 bushels; rye, 2,171,622 acres, 28,422,354 bushels; wheat, 33,574,341 acres, 468,306,778 bushels. Total, 140,179,185 acres, 3,520,967,511 bushels. In 1880 the figures were: Barley, 1,997,727 acres, 43,997,495 bushels; buckwheat, 848,389 acres, 11,817,327 bushels; corn, 62,368,504 acres, 1,754,591,676 bushels; oats, 16,144,593 acres, 407,858,999 bushels; rye, 1,842,233 acres, 19,831,595 bushels; wheat, 35,430,333 acres, 459,483,137 bushels. Total, 118,631,779 acres, 2,697,580,229 bushels.

HAWAIIAN COFFEE GROWING.

A Visit to the Groves and Description of Their Cultivation.

BY J. H. INGRAM.

FROM THE sugar cane plantations under the crater of Kilauea volcano I sailed around to the coffee groves on the west coast of Hawaii. At Kealahakua Bay I went ashore. On the coast of this bay the famous navigator, Capt. Cook, who discovered the islands, was killed by the natives a hundred and twelve years ago. On the beach a monument 60 feet in height stands erected to the memory of the great mariner. Above the bay Mauna Loa rises in lofty majesty 15,000 feet. The mountain slope is covered with masses of timber, and the trees are evergreen. The western coast has a model climate; rains rarely fall, and the atmosphere is dry and healthful. The district is called Kona, and is swept by the south trade winds, called on the islands Kona.

A village of grass-thatched huts stands along the side of the bay, but a settlement of Circassian residents is built for several miles along the mountain slope amongst the timber groves. Above, at the settlement along the mountain, the climate is cooler and too high for the ocean morning fogs. I went up into the settlement and stopped with a French family for a week. I engaged a horse and rode along the pike around the mountain side for 20 miles, under the outstretched branches of the tropical trees. This highway has been described by Mark Twain in his sketches of the islands, given in "Innocents at Home." It is one of the most beautiful rides imaginable. The trees form arches over the roadway, which resembles a long tunnel winding in and out of the grottoes and arbors of the tropical woods, while vines fall from the branches in swaying clouds of green.

The sea lay below, stretching its blue waters away in the distance, and the mountain above looks like a huge pyramid of forests. After a few miles I came to openings among the trees, and clearings were seen along the pike; the underbrush had been cut down and the vines removed. Under the forest trees appeared the coffee bushes loaded with berries. For miles and miles around the mountain side was covered with the coffee shrubs, and everywhere the twigs bristled with green berries.



The Coffee Plant.

The coffee tree is an undergrowth like huckleberries, and grows under the shade of the larger trees. The weeds, underbrush, and vines must be removed, as they choke the growth of the coffee bushes and retard the maturity of the berries. The bushes require some room and sunlight, but do not need cultivation. The little trees are the size of plum bushes, and have a foliage somewhat resembling the wild cherry. The leaves grow in pairs and are smooth and evergreen. The coffee blossoms are white and funnel-shaped, and appear in rows along the branches like the flowers on plum bushes, and not in clusters at the end of the twigs, like the flowers on apple boughs. When the coffee blooms fall off little green berries form on tiny stems around the twigs, and resemble young

plum fruit. The berries grow and develop until they attain the size of china berries, but are oblong in shape. They stick in thick masses along the limbs until ripened. They are encased in hulls about as thick as an acorn shell, but which open like bean pods. Between the thick shell and the berry is a soft, sticky substance like mucilage, and a second hull of lighter texture encasing the berries with wrappers of thin and transparent character. The fruit, although first green, turns a deep red color as it ripens. When ripe most of the berries are entirely red; but some are red on one side and yellow on the other, and others are red and green. But the berries, like apples, vary in color when ripe. Some are entirely green outside and deeply red inside, and sometimes yellow. The hulls are usually divided into two sections, and contain two coffee beans; they open in the middle like chestnut burrs and let the berries drop out. Some of the hulls have three sections and hold three beans, but are not common. Again rare specimens are seen containing several little berries within one inclosure. The bushes present a unique and pretty picture over the mountain slope, with the berries sticking like millions of green bullets to the limbs.

The wood is when barked white and yellow; when dried it is hard and heavy, of fine grain, and resembles birchwood, but is wiry and tough. If the bush would grow in cold climates it would make an attractive ornamental tree for lawns and parks. The trees grow from 10 to 30 feet in height, and have trunks from two to six inches thick. Some of the largest coffee trees are 10 inches in diameter, but the average size is three inches in diameter. The leaves are, like the Australian eucalyptus, considered an absorbent of malaria and a health-producing vegetation

for miasmatic swamps and river low grounds. The tree grows wild in the woods, but the berries of the wild trees—like the fruit of the wild lemon and orange—do not equal in quality the product of trees that receive attention.

In the coffee groves the trees are kept trimmed out, as they bear better when they have space to develop and attain their full growth. The soil on the mountain side is decomposed lava, ashes, and vegetable loam and is very rich. The dry atmosphere and scarcity of rain is well suited to coffee culture; wet weather or a damp climate cause the berries to drop off. For over 20 miles the slope is covered with coffee groves, but down near the sea the grounds are planted in orange and lemon trees, and have a fringe of coconut forests. The damps from the ocean and the night fogs from the sea blight the coffee trees near the beach, and the twigs shed their berries. The black mold which forms on the trees damage the berries, adheres to the boughs, and injure the trees; and the coffee trees do not descend below a certain elevation on the mountain side.

The tree is a hill-country product, and is found—in its native growth—in elevated regions of country. It, however, will grow on low ground, but does not flourish and reach its natural vigor and quality there. It grows on various kinds of soil, but a light bearing and sandy soil is best suited to its perfect development. The loose loam, mixed with gravel, on mountain sides or on rolling hills is the proper home for the coffee tree. The drainage in this location is good, and the groves are not injured by standing water; and the coffee tree, like goats, do best amongst rocks. The stones keep the soil porous, so that the roots of the trees can permeate the ground for a great distance and absorb the properties of the land and send nourishment into the berries. By a free circulation in the stony soil the wide-spreading roots collect the mineral properties from the land and rocks required for the production of coffee of fine flavor and superior quality.



VILLAGE OF KAAIALOA, ON KEALAKEKUA BAY.

The trees in rich and level areas produce a larger size and a more prolific crop of berries, but the beans are inferior in character and do not possess that fine property, the stimulation and delicious aroma, found in the fruit on high and elevated regions. The contrast, in fact, between low ground and mountain-grown coffee is as marked as the difference in the orange that grows on the bayous of Louisiana and the golden balls which ripen on the sand hills among the pines of Florida. The blossoms continue to put forth while the others are maturing, so that the ripe coffee can be gathered at almost any season. The fruit is picked by hand, or allowed to remain till ready to fall, and then shaken into cloths spread on the ground. It is dried in the shade and separated by hand from the pulp. When the moisture has disappeared the dried fruit is passed through wooden rollers, and is sometimes pounded in mortars. Then the pulp is washed away. The tough membrane is separated from the seeds in a similar way, with a heavy pair of rollers, and the chaff is removed by winnowing. There are great differences in quality and price, as equal care is not given to its preparation in all places.

The Hawaiian Islands are well situated to supply the Pacific Coast demand for coffee, and have conveniences and facilities for the economical shipment of the berries; but the great excitement given to sugar manufacture and the impetus received in cane production has attracted the great body of energy collected on the islands, monopolized the exercise of capital, and made sugar the main product and its exportation the chief industry here. Attention has thus been diverted from other minor but important enterprises, and the production of coffee has been neglected. The development of its yielding capacity has been retarded and almost swallowed up by its more ambitious and colossal competitor—the cane field.

Some French pioneers came over 20 years ago and started the coffee industry on the islands. They planted groves on the highlands of Hawaii, and for some years had a monopoly in the Sandwich Island berry business; but I have met some coffee growers from Central America on the island investigating its adaptability to coffee production and the extent of the territory suited for the industry. They seem well pleased with the conditions observed, and report a large area on the crater slopes favorably located and adapted for coffee groves.

The investment of considerable South American capital and the entrance of experienced producers from the little Spanish Republics in the coffee business on Hawaii will doubtless soon follow. The production of berries will probably be largely increased, and their exportation become a leading feature in the commerce of the Hawaiian Kingdom.

On the mountain slope above the old town of Wailua I came to a coffee planter's house, perched among coffee trees on the hills. I had a hospitable welcome by the berry grower, and was invited to take dinner. We talked about coffee, drank coffee, and looked out of the windows at the coffee trees, covered with coffee berries for miles and miles over the rolling hills. After dinner we came out on the long piazzas surrounding the mansion and enjoyed a view over the mountain side, with its beautiful coffee groves. The range extended in rolling undulations down to the seashore. At the ocean beach was seen the old Hawaiian village, with its Cathedral towers, and the heavy surf tumbling in great rows from the sea, with the great swells of the Pacific stretching away in the West. From this port the coffee is shipped in sacks to Honolulu and sent abroad.

OYSTERS.

A Crop that Requires no Sowing, Cultivating, Feeding, or Fencing—Superiority of the Transplanted Over the Natural Oyster.

EDITOR AMERICAN FARMER: Few people here, and still fewer away from here, appreciate at all the importance and the magnitude of our annual oyster crop. It is a crop that requires no sowing, cultivating, feeding, or fencing. It is a crop that is renewed year by year from the bountiful storehouse of nature. Like the "scriptural cruse of oil," it is never emptied, although constantly drawn upon by the improvident, wasteful hand of man. During these later years it is getting more and more the custom to take the oysters from off the "natural beds" and deposit them in quieter inland waters where they would fatten more rapidly for market.

In other words, the oysters on the natural beds were most too thickly settled to get food enough to go around and make them fat at all seasons of the year. This industry is a growing one. Lately on a short trip up the Nansemond River we had an opportunity of investigating the oyster business a little, and we found that in the lower 12 miles of the Nansemond there were planted 250,000 bushels of oysters that quietly lay there fattening for market.

The demand for the oyster is constantly increasing. The supply is perilously near the decreasing side of the matter, if not there already. In other words, the oyster on the public beds is in danger of extermination. This makes it necessary to utilize all the many thousands of acres of land-locked coves and quiet inland waters, where the oysters really fatten faster and has a better flavor than those taken from the outside public beds. In other words, the transplanted oyster is fatter, juicier, tenderer, and more attractive in every way than the oyster grown in too thickly-settled communities.

Without doubt there are fully 3,000,000 to 4,000,000 bushels of transplanted oysters at this time lying within 30 miles of this city. A large majority of these will be handled this coming Winter and Spring. They will be taken up and brought to Norfolk, and some of them shucked and sent away in barrels; others will be sent in the shell all over the United States. This business gives employment to 10,000 to 15,000 hands, all told. It is, in fact, already a great industry, and is becoming more so each year. The transplanted oyster commands, as a rule, about \$1 per bushel, while the oyster from the natural beds sells for as low a sum as 35 cents. On all the shores of this section is found ample evidence that "Lo, the poor Indian" was not quite so poor as represented. There are acres upon acres of old shell beds or heaps from one to 10 feet in thickness left by the Indians who occupied this section of country prior to 1492. "Lo," without doubt, took his oysters on the "half shell," or roasted in the fire with as much satisfaction and as much dignity—perhaps more—than his pale-faced successor.

One can hardly blame the Indian for wanting to keep his happy hunting grounds, such as he found on the Chesapeake and its tributaries. All these waters were the finest in the world for his swift, yet frail, canoe. Wild game was here in greater abundance than elsewhere in the entire country. In a half hour yesterday we started up several fine wild turkeys, plenty of quail, and any quantity of wild ducks.

But when the oyster starts out to multiply and replenish the water he (or she) is a success. It is estimated that one good, healthy oyster without half trying will produce spawn (locally called "spat") enough to make a million oysters. If one-half or even one-tenth of this "spat" matured it would ruin the oyster business in six months, as it would literally fill these waters full of oysters, and they would die for lack of food or room in which to develop. Nature, with her wonderful system of checks and balances, has decreed that not more than one "spat" to the 10,000 shall survive. The balance are consumed by other denizens of the waters, or floating out to sea they are lost. It has been stated on good authority that if the growth of all living things in the sea, including animal, mineral, and vegetable growth, could go on entirely unchecked for a period of only a few days (less than one month) the water of the sea would become filled to the very surface thereof, and the sea would be no more. And when we see that one oyster can reproduce itself 1,000,000 times without apparent effort, we can easily believe that it may be so.—A. JEFFERS, Norfolk, Va.

Passes One Way but Not Another.

"Does the new railroad pass your property?" asked a city man of his country friend.

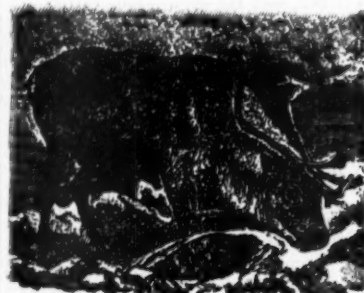
"No, it don't. It won't even pass our minister—he has to pay reg'lar rates," was the disconsolate reply.

REINDEER AS RACERS.

A New Venture in the Sporting Line that Promises to be a Popular Winter Pastime.

SPORTSMAN of Dayton has imported five Lapland reindeers, which he intends to train for a trial of speed against some of his best horses. One of the New York papers says he has sent them to Canada in charge of their native trainer, where they will remain until the cold weather sets in, when he will take them to Dayton. His object is to make reindeer racing a popular Winter sport. They will be driven harnessed to native sledges with the kind of harness used on the Russian steppes.

The domestic reindeer feeds wholly on a species of lichen peculiar to the country. He digs with his horns and roots under the snow with his nose for this food, and will not eat any kind of dried fodder, unless it be the river horsetail, which is a reed-like plant belonging to the fern family, and which is quite rare in this country. How, therefore, will the sportsman feed his reindeer? If he can overcome this difficulty, and if the United States Winters are cold enough for them, he may find them very successful racers. They have been known to run at the rate of nearly 19 miles an hour over a long stretch of snow, but it is not known how they would do at short spurts, or how their highest speed compares with that of a horse. They have endurance as well as speed. The ordinary weight which they carry is 240 pounds, but they can travel with 300. They take long strides, and run swiftly, but not gracefully.



The reindeer is invaluable to the Laplanders, whom it serves as ox, sheep, and horse. Its meat is said to be delicious, though in general the animal is considered too valuable to kill. The hides are used in many ways, and the milk of the herds is often the principal support of the owner and his family. We are apt to think of the reindeer as rather a graceful fawnlike creature, when in reality he has short, thick legs and broad main hoofs, which spread out as he speeds over the snow and snap together as he runs. He carries his head horizontally, and not erect, as is the case with other deer. His hair is longer in Winter, and of a gray or brownish color. The horns are very large, compressed at the top, and have a short branch behind. They are divided with many segments. A single branch sometimes springs from each horn in front.

In their natural state the reindeer go in flocks and migrate from the lowlands to the mountains in Winter, and return again in the Spring. This change is influenced mainly by the food supply, and the Laps who own herds have to move them about as the season changes.

If these rather interesting animals can be introduced successfully, they will be a novel feature indeed, and to those few who can afford to purchase them will supply some rare sport, perhaps.

Hop Statistics.

Hops are grown for commerce in 17 States. In the year 1889 50,202 acres of land were cultivated in hops, producing 39,163,270 pounds. New York heads the list with 36,670 acres, yielding 20,063,020 pounds. Washington has 5,113 acres, with a crop of 8,313,280 pounds; California, 3,964 acres, producing 6,547,338 pounds; Oregon, 3,130 acres, with 3,613,726 pounds, and Wisconsin, 967 acres, with 428,547 pounds. These five States, known as the hop-producing States, produce 99½ per cent. of the entire crop of the United States.

The increase since 1880 in the crop of California was 5,103,261 pounds; Oregon, 3,369,355 pounds, and Washington, 7,610,003 pounds. In the same time the decrease in the crop of New York was 1,565,962 pounds, and of Wisconsin, 1,538,280 pounds. The Census Office bulletin, which furnished the foregoing, also made it appear that Wisconsin has retrograded in rank as a hop-growing State from a production of 4,630,155 pounds in 1869, 1,966,827 pounds in 1879, to 428,547 pounds in 1889.

The three Pacific Coast States have rapidly increased in importance in hop production, as follows: 1869, 640,971 pounds; 1879, 2,391,725 pounds; 1889, 18,474,344 pounds.

Brazil's Big Coffee Crop.

It is stated that in San Paulo, Brazil, there are two coffee plantations, the larger with 600,000 trees, of which 250,000 are in bearing. This plantation produced 640,000 pounds of coffee in 1887, last year 448,000 pounds, when great losses were experienced, and this year the crop is estimated by the best experts at 1,280,000 pounds, which should reach during the next three or four years, when all the trees are in bearing, an output of 2,560,000 pounds. The other plantation has 32,000 coffee trees, which are now so enormously loaded with fruit as to obstruct the seven-foot paths between them. The crop this year is estimated at 200,000 pounds. The above details are interesting as showing that in Brazil they obtain, in favorable localities and good seasons, a yield of from four to six pounds to the tree.

FARMING AROUND JERUSALEM.

The Hardships Which Make the Condition of the Eastern Farmer Unpleasant.

While spending a short time in Jerusalem I asked a well-informed Englishman how the farmers in the vicinity got along.

"Farmers?" he said, with a surprised rising inflection. "There are none or next to none. All the people live in huts in the little villages. They go hungry the most of the time. They all try to get away and some succeed."

"Why do they not take land and raise crops?"

"Because the Turkish Government lays its hand on everything. The arable land all belongs to the Government, and the law permits any man to till it who chooses on condition of paying tithes—that is, a tax amounting to one-tenth of the crop.

"A heavy tax, you say, but that is by no means the most. The tax collectors are totally irresponsible—to everybody except the Sultan. The Turkish Government lets out the office of Collector to the highest bidder; that is, to the man who will agree in advance to return the greatest revenue, a direct premium for robbery and tyranny. Sometimes the lucky bidders sublet their contract to others, and they to others again; the last bidder extorting enough to pay the Government and himself and all the blackmail between. To do this, instead of taking a tenth of the crop when it is harvested, they take a quarter of it, or, perhaps, a half of it, and the farmer is robbed and left penniless. These collectors are army officers, and they have not been paid a cent in four years, so they habitually and systematically steal by tacit permission of the Government. There is only one way to raise any sort of crop in Palestine, and that is to bribe the officers in advance or take them in as partners. Even this sometimes fails to protect.

"Do you see that ragged man out of the window?—that very tatterdemalion carrying a load? His feet and legs are bare and his brown blanket is full of holes, and he is working as a laborer of the lowest class. Well, that wretch is a private in the Turkish army—a soldier. The regular wages of the Turkish soldiers is 30 cents a month—a cent a day. But they have only been paid half of it for two years, now, and to keep from starvation the soldiers have to work and beg and steal, as a chance for either presents itself.

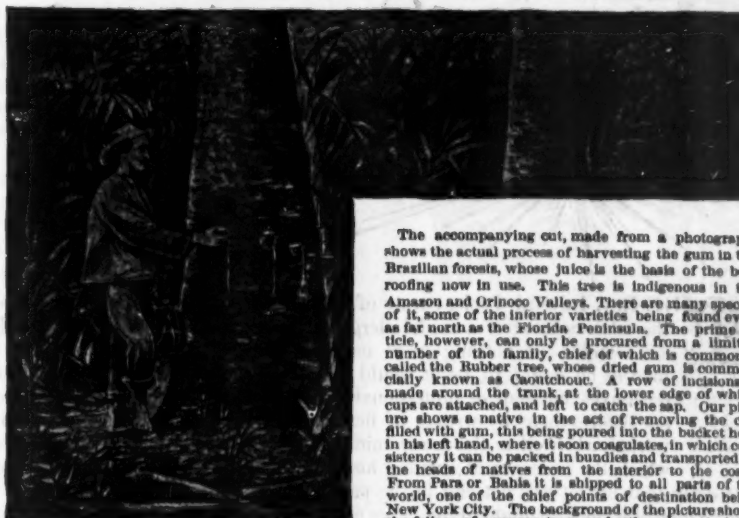
"You Americans, I fancy, have no idea what a Government like this is capable of doing. Two months ago it sent two regiments of soldiers here into barracks. The first thing they did was to seize every camel in the streets of the city and press them into the service of the Government for six months without pay. Many poor men are ruined by it—totally ruined. The English Consul saved some poor friends of his by swearing that he owned their camels and letting them serve him by doing their own work.

"If a village refuses or hesitates to pay its tax the Government sends seven to 10 soldiers and quarters them on the village till the tax is fully paid. This sort of exaction has crushed the life out of the people, till nobody has the least energy or ambition left. If a man sets out an orange tree or sows a single rod of wheat he has to pay backsheesh to the nearest officers."

It is not easy traveling here. There are only two roads in all these thousands of miles; the rest of the thoroughfares are mere camel tracks. We went on horseback down to the Dead Sea and back, 75 miles, via Jericho. Did we "fall among thieves?" No, verily, for the reason that the thieves fell among us—at least, the chief of them. The wild Bedouins claim to own all of that country, because nobody but themselves live there and they exact the tribute. So when we decided to go it was necessary to do two things: First, we must send the Yankee who dwells here in Jerusalem down to Jericho to open his hotel there—the only building in the town except mud huts; and second, we must hire the sheik of the Bedouins to be our guide to keep his tribe from robbing and killing us. We paid him \$5 a day to ride at our head with a tremendously long rifle and secure our safety. It was blackmail. But he was a picturesque creature, with loose, baggy red trousers and an embroidered green cloak from Bagdad—he said he paid \$6 for it—surmounted by a scarlet tarboosh with a big puggery around it that looked like the Stars and Stripes. And so we wound down the steep abysses, 10 of us, and the hotel man had some hours the start of us, with his mules laden with wine and flour and grapes and potatoes. It was an arid and desolate country. We filed past the Mountain of Temptation, and the sight from there tends to depreciate the reputed sagacity of the distinguished tempter. A sensible man would not give his breakfast for all the country that can be seen for 20 miles in every direction from that slightly and imposing promontory.

One of the oddest things encountered in Palestine is a woman at the churn. The churn of this region was once animated, having been a goat in its better days. Now the goat had vanished from it, flesh and bone, for the table of the epicure, and the good wife hangs up to a spike on the ceiling his skin by the neck and pours into the uncanny vessel her wooden trays of milk. Then she churns, by seizing the ghastly thing by the dropsical hind legs, and swinging it half round her and back again in tiresome oscillation, as monotonous as any old wooden churn in a Yankee kitchen. When the butter "sets" she rests her weary arms and rejoices, and then she carefully unties a hind foot, which has served for a handle,

THE ROOF TREE.



The accompanying cut, made from a photograph, shows the actual process of harvesting the gum in the Brazilian forests, whose juice is the basis of the best roofing now in use. This tree is indigenous in the Amazon and Orinoco Valleys. There are many species of it, some of the inferior varieties being found even as far north as the Florida Peninsula. The prime article, however, can only be procured from a limited number of the family, chief of which is commonly called the Rubber tree, whose dried gum is commercially known as Chochoutou. A row of incisions is made around the trunk, at the lower edge of which cups are attached, and left to catch the sap. Our picture shows a native in the act of removing the cup filled with gum, this being poured into the bucket held in his left hand, where it soon coagulates, in which consistency it can be packed in bundles and transported on the heads of natives from the interior to the coast. From Para or Bahia it is shipped to all parts of the world, one of the chief points of destination being New York City. The background of the picture shows the foliage of younger trees and other characteristics of an equatorial jungle. The leading consumer of this

article in the United States is the Indiana Paint & Roofing Co., of 46 West Broadway, New York City. This company utilizes the gum of the tree as the chief ingredient in the manufacture of a variety of roofing material which within the last twenty years has become so popular that it is rapidly supplanting all other kinds. The causes of its inroads upon both the primitive shingle and its modern substitutes have been various. Rubber Roofing has been found to be the most durable of all roofing when put to the test of the weather in climates ranging from the very coldest to the very hottest, as well as in wet and dry seasons. It stands equally well the Summer sun without melting, as the Winter ice without cracking. In this age of competition price is a vital consideration, and the roof we are discussing is not only the most durable and easiest for anyone to apply on flat or steep surface or over old shingles, but is far and away the least expensive. Full particulars relative to Rubber Roofing will no doubt interest many of our readers. The company will gladly give anyone an estimate as to its cost for any size building if its length and width be stated; all that is necessary is simply to write them at once.

and draws out the buttermilk, afterward removing the butter by way of the slitted bricket. This seems to be the universal churn of the Orient.

Whose milk is it? A goat's, probably. A sheep's, perhaps. A camel's occasionally. I am tired of goat's cheese, sheep's milk, and camel's butter, and when I get home shall hug the first cow I see.—W. A. C.

Docking Horses' Tails.

The Royal Agricultural Society of England has wisely proposed to give no prize to foals that have been docked, and when England gives up the fad our New York dudes will abandon it as an English craze. An English writer, explaining to tenant farmers the loss they sustain in docking their foals, says:

Having made inquiries of the great London dealers about high-class carriage horses, I find they will not buy them if docked, as they are made unsalable thereby. It is also a rule made by army remount purchasers that no horses are taken which have been docked.

At the agricultural show lately held at Welbeck, where the Duke of Portland gave away a large sum for prizes for horses bred by his tenants, and which is worthy of all praise, he particularly requested his tenants to abstain from docking foals, as so injurious to their own interests; and at the Autumnal show, at Elvaston Castle, of horses bred in the neighborhood, the same advice was given by Lord Harrington, both of these being large horse breeders.

The loss of the tail causes constant suffering and annoyance from the inability to get rid of the swarms of flies. I have been lately watching some foals of a tenant, which have been docked, and cannot rest from the attacks of the flies, whilst over the hedge, my own young horses with long tails enjoy comparative ease. This applies equally to yearlings, when a long tail can completely sweep the body and so allay the constant irritation.

London high-class barouches and state horses derive much of their value from a full tail, well set on. Perhaps the most benefited by a short tail may be drag horses and some cobby ponies.

French Oats and Barley.

Official statistics regarding the barley crop of France show that the area sown in 1892 is 960,154 hectares, against 1,190,310 hectares in 1891. The yield of this year's crop will amount to 17,626,433 hectoliters, against 26,623,973 hectoliters last year.

The area of oats sown is 3,800,516 hectares, against 4,092,467 hectares last year. The yield is estimated at 85,858,580 hectoliters, against 106,627,396 hectoliters in 1891.

Well can the poor farmer wonder, when science tells him that there are over 20,000 kinds of butterflies.

They do not seem to stop at large things out West. An irrigation canal in Utah and Idaho will irrigate 100,000 acres of land.



THE Rev. Edward Peele, curate of St. Mark's, Shelburn, hardly realized the modern ideal of a model clergyman. As most of our modern ideals are founded on nothing more material than a novelist's conception of man as he ought to be, it would have been strange if he had. Even detectives, amateur or professional, find it hard to live up to the standard set before them by writers of fiction. Nevertheless, Mr. Peele did his work fairly well in the lower middle-class suburb of the great port to which the necessity of earning his living had called him, and thanked fate daily that his lot was not cast in the parish of St. Paul, down by the docks.

About 9 o'clock at night, if he happened to be at home in his lodgings, it was his custom to lay aside his clerical coat, put on his college blazer, and let the wayward thoughts of the natural man have free play till bedtime. He thought it rather hard lines if anyone called on parish business at that hour, and had told Mrs. Lee, his landlady, to parley with any such inconsiderate persons at the outer gate, and, if possible, induce them to call again at a more convenient season. Consequently, one evening in the Spring of the year 1877, he was annoyed when Mrs. Lee knocked at his door and said that a young woman wanted to see him.

"Can't she come to-morrow?" he asked, testily. His modest stipend did not allow him to indulge in the luxury of a special room for pastoral interviews, and he was half way through his first pipe and had just opened a bottle of beer.

"No, sir; leastways she says not," replied the landlady, evidently doubtful of the caller's veracity.

"All right; then show her in. Do you know who she is?" asked the curate.

"No, sir, not by name; but I think it's a young person in the dressmaking at Webb's," replied Mrs. Lee in a tone that implied her poor opinion of Mr. Webb's dressmakers as a body.

The curate's face brightened. His favorite Sunday-school teacher did, he knew, occupy the responsible position of "first hand" in the great drapery establishment of Webb & Co. He arose and went to the door himself, polite and apologetic.

"Oh! pray come in, Miss Jebson," he said; I had no idea it was you. This is an unexpected pleasure. Won't you take a seat?" he continued, as his landlady closed the door behind his visitor and retired to her kitchen in the basement sniffing superciliously.

Miss Jebson was a young woman apparently about five-and-twenty—the curate's own age—decidedly pretty in a somewhat pronounced style, and quite self-possessed.

"Really I don't know what you will think of me, Mr. Peele, calling at this hour," she said, as she took the proffered chair, "but I am kept so late at business just now that"—

"Don't mention it, Miss Jebson," he interrupted. "As you see, I am more fortunate than you. For once in a way I have finished my work unusually early and was—was really feeling quite lonely."

The gentleman smiled as he finished his sentence, the lady blushed slightly, and their eyes met. Then she coughed and looked down. It was a little—a very little—cough; but the curate said immediately:

"Oh, dear, I'm afraid the smoke is troublesome to you, Miss Jebson. Bad bachelor habits, you see."

"Not at all, Mr. Peele," she hastened to reply; "not at all, I assure you. It smells—well, homelike, you know;" and again their eyes met.

The eye has been called the rapier of flirtation, and it was evident that the curate and Miss Jebson were now enjoying not by any means their first bout with that fascinating weapon. Their conversation, too, was frisky and did credit to their capacity for making the best of this rare opportunity of allowing natural frivolity to forget for a moment its artificial trammels. After flitting around various subjects it touched at last lightly upon the bottle of beer, and the curate was only prevented from opening one for his visitor by her frightened exclamation of:

"No, don't Mr. Peele! She'll hear the cork pop."

This reference to Mrs. Lee made the curate, as it were, lower his point for a while, and with as near an approach to his clerical manner as could be expected under the circumstances, he asked:

"By the by, Miss Jebson, what was it you wanted to see me about?"

"There now," retorted she still playfully, "you nearly made me forget all about it with your nonsense. I wanted to ask you about—about a sort of legacy."

"A legacy! A large one, I hope," said the curate, suavely. "But you know, my dear Miss Jebson, I am not sufficiently blessed, or burdened, with this world's goods to be much of an authority about investments."

"It isn't exactly about investment I want to ask you," she replied, showing

for the first time some slight confusion of manner. "It's not money; it's diamonds."

"But diamonds," objected the curate, "can be turned into money, you know."

"Yes," she assented, "that's just it. How am I to turn them into money? I had an uncle who went out to the Cape many years ago, and he has just sent them to me by a sailor—a mate."

"Sent them to you by a sailor?" repeated the curate. "Was not that rather rash?"

"Well, I suppose it was," she agreed, "but it was very like poor uncle. Besides the man who brought them came from our village; it wasn't like trusting a stranger, you know."

"Then your uncle isn't dead?" asked the curate.

"Oh! no. At least he wasn't when he sent them off," she replied, "but I don't know where he is, except that it's somewhere in South Africa, and Jack Suggitt—that's the sailor—just handed me the basket and said: 'Here, Polly, your uncle Fred sent you these with his love,' and was off almost before I had time to thank him, as he sailed that tide for San Francisco. He said he had only been in port three days, and had some trouble to find me."

"Dear me, what a very curious proceeding!" remarked the curate. "Didn't your uncle even send a letter with them?"

"No, nothing," she replied. "Just the diamonds; that was all."

"What a strange way of sending a present," he said, "especially as I suppose it was a valuable one."

"Well, yes; I suppose they are valuable. There are such a lot of them; look, Mr. Peele," and she took from her pocket a small canvass bag and poured its contents out on the table.

The curate was dazzled; not literally, because the stones were uncut, but metaphorically. He had expected to see half a dozen gems at the most, and there were about 200 spread before him.

"My dear girl," he exclaimed, startled, "do, for goodness' sake, put them away before Mrs. Lee comes in. I had no idea you had so many. But how do you know they are diamonds?"

"Well, Suggitt said they were, and I showed my landlady's son, who works at



"MY DEAR GIRL," HE EXCLAIMED.

a jeweler's, just one little one," she explained.

"Why, they must be worth thousands," he said. "I really don't know what to advise."

He was prevented from considering the matter further just then by Mrs. Lee, who knocked at the door, opened it, glanced with some asperity at Miss Jebson, begged pardon, and remarked that, thinking the lady must have gone, she had come up to fasten the front door.

On this hint Miss Jebson rose, and the curate, who trembled at the thought of such wealth going unprotected, prepared to escort her home. Their way lay through quiet streets on the outskirts of the town, and as they went the spirit of flirtation resumed its sway. They are, as the novelists say, when they have enough to work on without padding the volume with another love scene, conversations which the imagination of the experienced reader is able to supply for itself. The imagination of the reader will therefore doubtless be equal to the task of picturing to itself how the influence of the diamonds gradually materialized the spirit of flirtation on this occasion, until it presented an appearance indistinguishable from that of serious lovemaking.

The serious lovemaking, moreover, did not end with the walk. Mr. Peele belonged by birth to much the same social stratum as Miss Jebson, and his university career had somehow failed to imbue him with either aristocratic prejudices or high aspirations. He had no means beyond his stipend, and confessed to himself in moments of candor that he had neither virtues, talents, nor interest enough to expect high or speedy promotion. The pretty dressmaker and her diamonds might, he felt sure, be his for the trouble of asking, and ere long he put his confidence to the test.

The lady had no reason for saying no. As a clergyman's wife, she thought she would have an assured and desirable position in society, and she liked well enough the clergyman who was willing to give her the chance of taking it. Whether he would have married her without the diamonds she did not ask herself—for, indeed, she knew that it would have been impossible for him to do so.

Neither of them had any relations to consult, so within a month of the sale of the stones—which the curate effected with the help of his banker for between £12,000 and £13,000—they were quietly married. Three months later the clerical journals notified the appointment of the Rev. Edward Peele, late curate at St. Mark's, Shelburn, to the so-called living of Petherby—one of those unfortunate places which are occasionally advertised as needing an earnest clergyman with enough private means to make him independent of any official income.

One evening toward the end of last June the vicar of Petherby sat in his garden arguing with his wife, or rather listening resignedly to what she had to say, on the subject of the annual migration to the seaside.

The position of vicar seemed to have suited Mrs. Peele. She had grown stout, but was still quite as good looking as any woman of 40, the mother of three children, can expect to be. Her eyes were as bright as ever, though the glances thereof had lost all unseemly levity and assumed the power that comes of much practice in the art of keeping farmers' wives in their proper places. She ruled her husband and the parish with an autocratic, but, on the whole, a beneficent away.

The Rev. Edward Peele had distinctly degenerated since his Shelburn days. He, too, had grown stout, as lazy men in easy places are apt to do. His face was red, and as the face of one who lives almost too well. As his wife's lieutenant he administered the affairs of his parish in a way that, if it did not call forth the admiration of his Bishop, yet escaped his admonition as perhaps the best that could be expected from a man a little below the average for next to nothing a year.

His only remaining taste of an elevating character was a fondness for cricket. The village club he managed himself, and its affairs consequently showed more tendency to get into a tangle than is common even in village cricket clubs. With the hope of seeing his favorite game played in perfection once again, he had tried to persuade his wife to take her Summer change at Skelmersham, an inland watering place famed for its cricket fortnight.

It was not to be, however. Parsons of high degree were common at Skelmersham, and Mrs. Peele there felt herself nobody. Anyone above the rank of a dissenting minister counted for somebody at Barmby, a fifth-rate seaside place, and so to Barmby she had determined to go as usual.

After condescending to set forth more in detail than usual her reasons for this step, she remarked by way of peroration:

"Then that settles it, Edward. If you go on Monday to look for rooms, you ought to get back by Wednesday night, and we can all leave here early Thursday morning."

Next Monday evening the vicar accordingly found himself in the melancholy coffee room of the only hotel at Barmby, gazing into the empty fireplace, which was not yet decorated for the season, smoking and thinking—if the word can be applied to the vague musings of a man who for 15 years has lived a life as idle and self-indulgent as is compatible with sustaining without ill repute the character of vicar of a small country parish.

He had just come to the comfortable but probably false conclusion that but for his wife and her diamonds he might have been a better, or at least a more eminent man, when the door opened sharply and a second guest entered the room. The vicar looked up, and the new-comer greeted him with—

"Hullo! All alone here, and down in the dumps, too! Better join me in a drink, sir, just to lift you out of them a bit."

The vicar was not accustomed to move in that section of society in which the offer of a drink from a total stranger is not uncommon, but he was still less accustomed to refuse at a moment's notice to do anything he was told. Moreover he had read that American desperadoes held the refusal of such an offer a sufficient excuse for the use of their favorite weapon, and the man before him was not unlike his mental picture of an American desperado, so he murmured feebly:

"Well, thank you; I was, indeed, thinking of ringing for the waiter when you came in. Really, I think nothing makes one so thirsty as traveling."

"Ring away, then," responded the stranger. "What's it to be, though? Whisky? Right. Waiter, two big whiskies and soda. Soda's a sort of antidote to the poison they call whisky in this kind of shanty, don't you think?"

"But, indeed," ventured the vicar, as his new acquaintance paused for breath, "the whisky they used to keep here was rather good."

"Been here before, have you, then, Mr.——" rejoined the other, and paused again, as if expecting to be supplied with the name.

"Peele is my name," replied the vicar, who was affable, and had not enough dignity to be offended at the man's brusque manner. "Might I ask?"

But he got no further. With an oath the stranger jumped up from the table on which he had taken his seat and roared out:

"What? By the living jingo, Pell, did you say?"

"No," replied the clergyman timidly. "Peele—P, double e, l, e."

The other said nothing for a moment, but eyed the trembling vicar suspiciously.

"Were you ever in a place, crib, berth, or whatever you preachers call it, at Shelburn?" he asked at last.

Intuitively the vicar knew that a truthful answer to this question would entail unpleasant consequences, and, not being of the stuff of which martyrs are made, he replied, unblushingly:

"No, sir; never in my life."

"Ah, well," said the stranger, who had now calmed down considerably, "then you can't be the man."

"What man do you mean?" asked the vicar.

The other laughed.

"Oh! a chap in your line of life who married an old friend of mine years ago," he said, lightly. "I've often thought I'd like to meet him, and find out what sort of a yarn Polly spun him about my diamonds, and if she told him she had 'em before or after they were spliced."

He delivered himself of the latter part of this remark more as if he were thinking aloud than addressing his companion. Then he relapsed into a moody silence, fixed himself more firmly on the table, and sat swinging his legs with an empty pipe between his teeth, absorbed, no doubt, in memories of the past.

The vicar, watching him cautiously out of the corner of his eye, was able to

take in the details of his appearance better than he had hitherto done. He seemed to be a reckless, good-humored sort of fellow, with something of the sailor about him, and a good deal of the free-living blackguard. To drink he was evidently no stranger, and yet his clothes were good enough to make it clear that he was in no immediate want of ready money. The vicar had just come to the conclusion that the man was probably a little mad, and might on occasion be not a little dangerous, when he spoke again.

"I believe there's something they call a billiard table in this hole," he said. "Do you play, Governor?"

As Mr. Peele had not touched a cue since his undergraduate days, his answer of "A little, but I am rather short of practice," was more literally true than it usually is when used by amateurs as the proper form of reply to a stranger proposing a game.

Mr. Peele's knowledge of billiards was, as a matter of fact, very elementary indeed, but he would have played quoits—of which he knew absolutely nothing—for a pound a side rather than lose the chance of getting a little further information about Polly and the diamonds.

His desire for knowledge was soon gratified. The stranger tired of an opponent who had to be reminded continually, when in hand, that a ball in balk was unplayable, and said, sarcastically:

"I don't think, friend, you were quite Roberts at six stone when you were turned out of training. Suppose we sit down and have another drink?"

The vicar accepted this proposal willingly, though he mildly insisted on paying for the drink. The stranger, after some persuasion, allowed him to do so, declaring at the same time his own ability and readiness to buy up the cellar of the inn if he chanced to find companions to his liking, ready to do their share in swallowing its contents.

"Yet, you know, parson," he went on, "I like you the better for standing your turn. Gents in your line are most of 'em all take and no give. I've often thought it must rile Chaplains in Portland and places, not being able to pass around the plate to the convicts. But not one of you, I'll lay, ever had such a haul at one cast as that chap Pell."

"Oh! you mean the man that married your friend with the diamonds," said the vicar as unconcerned as he could. "I should like to hear the story."

"Well," said the other, graciously, "you seem a good sort, and you shall. In those days, 15 years years ago or so, I had a lovely little bag of shiners, uncut. Enough to set a man up for life in a modest way if he could sell 'em honest and keep clear of those foreign thieves in Amsterdam. And I gave them all to this girl, that I'd known from a child, to keep for me."

"But why did you do that?" interrupted the clergyman. "Surely it was rash. Why did you not dispose of them yourself or deposit them with a banker?"

"Why didn't I," began the other, but checked himself and surveyed his questioner with a somewhat suspicious and decidedly hazy eye. "Oh! You want to know too much, you do. Perhaps the market was falling just then, or perhaps I had a pressing appointment—never you mind. Anyhow, I left 'em with Polly Jebson on a sort of time bargain. If I turned up within 10 years we were to set up housekeeping on 'em, and if I didn't, well, they were hers anyway. I got off light—I mean returned before the time was up a good three years—and blessed if I didn't find she'd married a parson within 12 months of the time I went away. Came into money, the folks said, and left her situation to marry this chap called Pell."

"Dear me!" remarked the vicar, doing his best to speak sympathetically, yet calmly. "What a base betrayal of trust! And did you take no steps to trace her and your property?"

"Not me," replied the other in a scornful tone. "For one thing, I'd come into a nice bit of money in the interval; more than as much as did for me, being a man of simple tastes; and for another, as I told you, it didn't exactly suit my book to let all the world know I had the stones. Not that I hadn't come by them honestly enough—but there; all that don't matter anyway."

"Then you really don't know what became of her or them?" asked the vicar.

"Well, no; not exactly," said his companion, "and I don't want. I'm not a spiteful chap, and it would do me no good to stir up old mud; but if I met that chap Pell, blessed if I don't think I'd ask him whether his wife ever mentioned Jack Suggitt. As for Polly, I dare say I was well out of the way at the price. She'll have run to fat and temper, and perhaps a large family, as like as not. Her mother did. But I'm precious dry; let's have one more drink before turning in."

The vicar sighed, but did not refuse. He felt that Mr. Suggitt's mood was not to be depended on, and that he was in a ticklish position. The drinks came and were consumed in silence. Then, to the vicar's great relief, the other said, politely:

"Well, good night, Governor. Early to bed's my motto when there isn't anything to sit up for. Glad to have met you. See you again to-morrow, eh? I'm here for a week or two myself under doctor's orders."



THE VICAR LOOKED UP.

He retired without waiting for a reply, and the vicar, after a judicious interval, followed his example, sorely troubled in mind. He slept but little that night, and fled by the first train in the morning.

His wife, after greeting him with the expression of her disbelief in his ability to thoroughly inspect all the suitable apartments and choose the very best in less time than she had allowed him, noticed his pale and troubled look and exclaimed:

"Why, Edward, whatever is the matter with you? You look as if you had seen a ghost."

"Perhaps I have, my dear," he replied, feebly. "The ghost of the sailor who gave you your diamonds."

"Don't try to be funny, Edward; it doesn't suit you," retorted his wife with all her usual severity and self-confidence. "What do you mean?"

Slowly he told his story, and slowly, but with amazement, did he note that, though the gloom gathered on his wife's brow, she showed no sign of fear or shame. When he had finished the storm broke.

"And you dare to tell me you believed this tale, Edward Peele?" she began. "I send you to seek lodgings, and you spend the time you ought to be devoting to the future comfort of your wife and family in consorting with drunken sailors and listening to scandal against me. What would you have been without me, I'd like to know? A starving curate, in debt to your very landlady. A man would have knocked the fellow down first and given him in charge for slander afterward."

"But, my dear," pleaded the miserable vicar. "I never said I did believe his story." His conscience smote him, however, for it had never entered his head to doubt it.

His wife deigned no immediate reply. She treated him with open scorn for a fortnight, but did after all desert Barmby for Skelmersham, for fear, as she said, that her husband should further disgrace himself in low company. This apparent consciousness of rectitude greatly relieved Mr. Peele's mind. It was quite possible, after all, that the man Suggitt had persuaded himself that the diamonds intrusted to him had been his own. Doctors differ as to whether the wish to believe makes belief harder or easier. The vicar certainly wished to believe his wife's version of the affair, but could not free his mind from the idea that it was his duty to probe it to the bottom. That, with the fear of his wife before his eyes, he would ever have done that duty is not probable; but he was spared from the trial of making the attempt. Three weeks after his visit to Barmby he saw a report of an inquest on a man who had killed himself there while under the influence of drink, and a few inquiries satisfied him that the subject of that inquest was the eccentric stranger whose story had so troubled him.

Still, he will never read of the virtuous woman who was above rubies without thinking of the cynic's comment upon her, unless he receives stronger proof than he ever expects to get of the actual existence of that generous giver—his wife's uncle at the Cape.—*All the Year Round*.

Broad Tires Make Good Roads.

The narrow tire in general use should be taxed out of existence for heavy hauling, either by increased tolls or County tax. They damage the roads over which they travel with heavy loads 100 per cent. more than moving double the amount of freight would do if broad tires were used. The general turnpike act, which is still in force in England, regulates the weight to be carried by the width of the tires used on wagons, carts, etc. A wagon with a nine-inch tire is allowed to carry six and one-half tons, those with a six-inch tire four and three-fourth tons, and those with four-and-one-half-inch tires four and one-fourth tons. Overweight is charged by the turnpikes when the loads are above statutory limit.

If this plan was adopted, requiring heavy loads to be carried on broad tires, the turnpikes and non-macadamized roads would last much longer. In the absence of legislative enactment, if the turnpike companies would allow wagons using broad tires a reduction in tolls, or charge no toll at all, this concession would induce the use of broad tires instead of the narrow ones.

Another suggestion has been presented—that of increasing the length of the front axle so as to prevent the wheels from tracking. This would allow a wider wagon box, as it could be built to within two inches of the rear wheels. It would facilitate turning, and would prevent collisions which would be more apt to occur if the rear axle was lengthened.

These subjects and others equally important will be discussed at the Road Convention to be held in Chicago at an early date.—*Industrial American*.

The Great Japanese Tree Lilac.

Syringa japonica, the great tree lilac of northern Japan, certainly improves with age, and the large plants in the gardens of eastern Massachusetts, where this fine plant was introduced several years ago through the agency of the Arnold Arboretum, are better than ever this season, being covered with their immense clusters of creamy white flowers, which stand up boldly above the masses of rich dark-green foliage.

Among small late flowering trees *Syringa japonica* here at the north has no equal when once it is established in deep, rich soil, with sufficient room to insure the growth and ripening of its upright, rather rigid, branches, which when the plants are well grown form a compact, rather formal head. The largest plants in Massachusetts are now nearly 20 feet high and 12 or 15 feet through the branches.—*Garden and Forest*.

ARMS AND LEGS, WITH RUBBER HANDS AND FEET.

The artificial leg with the rigid ankle, in which a life-like movement was obtained at heel and toe, was the invention of A. A. Marks. The important end obtained by him was the doing away with straps, hinges, or other cumbersome and complicated appliances considered necessary, prior to the discovery of Mr. Marks, to give flexibility at the ankle. The remedy of Mr. Marks for all the troubles resulting from the old form construction was very simple. It was simply a rubber foot, modeled after the human original, pliable and flexible at both heel and toe. It was found that the motion in walking with one or even two of these rubber feet could not be ordinarily distinguished from that of a person whose pedal extremities were natural. The same material has also been utilized in the manufacture of an artificial hand. Tens of thousands of both arms and legs have been made and are now being worn in all parts of the world. The following letter is a fair sample of thousands of testimonials received by the firm:

Mr. A. A. MARKS.

DEAR SIR: After having worn one of your artificial legs with rubber foot for more than fifteen years, I have no hesitation in saying it is the best leg in use, as it is simple and the most durable of any that I have seen. I have examined and worn five different makes since 1862, and find none as useful as yours. I can heartily recommend the rubber foot as the most durable and easy to handle. I am a blacksmith, and shoe horses. I have dug wells and quarried stone, and other heavy work. I can walk farther in a given time than any man can on any other kind of a leg, with the same length of stump as mine; it is only three inches from center to hip-joint.

Yours, etc.,

E. LINCOLN.

By our copyright formula applicants can supply us with all the data necessary to secure a fit while they remain at home. One-half the legs and arms furnished by us are made from measurements and profiles without our seeing the wearers. Fit always guaranteed. A Treatise of over 400 pages, with 200 illustrations, and nearly a thousand testimonials, sent free.

A. A. MARKS, 701 Broadway, New York City.
ESTABLISHED 40 YEARS.



Corn for Mexico.

Advices were received at San Antonio, Tex., on Oct. 22, from Zacatecas, Mexico, that a killing frost had visited that section and the new corn crop was completely destroyed. That is the great corn-raising district of Mexico, and the calamity coming at this time will have the effect of causing the present suffering on account of a shortage in the crops to continue for another season unless relief is obtained from charitable sources.

There is no decrease in the rush of corn shipments from the United States into Mexico. There is a car famine on the Mexican Central Road, and the blockade on the Texas side of the river is alarming to the officials of the railroads concerned.

The International & Great Northern Road has on its tracks between San Antonio and Laredo 1,100 cars loaded with over 500,000 bushels of corn, while on the side tracks of the San Antonio & Aransas Pass Railway there were at that date 300 carloads of the grain awaiting transfer to the Mexican National Line.

At El Paso the Atchison, Topeka & Santa Fe Road has 60 carloads of corn which it refuses to turn over to the Mexican Central owing to the difficulty in securing the return of cars when once they enter Mexico.

The great blockade of corn at Torreon, at the junction of the Mexican International with the Mexican Central remains unbroken. The Mexican Central refuses to accept the cars, on the ground that the rate is a losing one, and that their traffic facilities are taxed in carrying on their regular freight business.

The grain-exporting firms of the city received, on Oct. 23, a copy of the following official decree issued by President Diaz, and in effect in Mexico from Oct. 22:

"From this date and until the 30th of November of the current year corn in grain and flour and beans introduced for consumption in the Federal District shall be exempt from the portazgo duties established in the tariff decree of June 14, 1892.

"From the 1st of December of the current year until the 31st of January, 1893, native corn in grain or flour and beans introduced for consumption in the Federal District shall be allowed a reduction of 75 per cent. on the portazgo duties established in the decree of June 14, 1892.

"The Special Charity Board, organized under the conditions specified in the decree of the 18th of last June, shall be allowed the franchises conceded by the decrees of June 18 and Sept. 9 of the current year until the 31st of January, 1893, with respect to native corn and beans."

Coffee is Getting Dearer.

Housekeepers may as well prepare themselves to pay an advance on the present high prices of coffee. There were advances in Monday's market ranging from one-third to three-fifths cents in speculative options, while spot coffee, which sold last Thursday at 16 cents for the common grade known as No. 7, was quoted Monday at one-quarter cent higher.

The price of coffee has been moving upward for several months. Spot coffee sold in Midsummer at 12½ cents. It advanced steadily and reached 15½ cents last month. Since then the advance has continued without material reaction.

There is no immediate prospect of an easier market. Advices from Rio have been contradictory, at times reporting a short crop and again denying it. The market there is plainly in control of speculators. Regardless of manipulation, the general impression is that the crop will not be up to the average in quality or quantity. This opinion is reflected in higher markets on moderate dealings in Hamburg and Havre as well as in this city.

NOVEMBER WORK ON THE FARM.

Some Things Which Should Now Engage the Farmer's Attention.

The farm work at this time is so varied that the farmer hardly knows what to do next. As a rule, there has been a great many plans and resolutions formed, and the Autumn days go so hurriedly by that some things are likely to go undone again as in the past. This fact calls for system and diligence lest Winter comes before all things are snug.

The crops may have been so injured by the extremes of weather that the food supplies are a little short. Anyway it is the duty of the farmer to so arrange for the best results from what he has garnered that nothing be lost by bad methods of feeding, by shortness of feeding, nor by exposing his animals so as to require his scanty, at least costly, supplies to furnish both warmth and growth to his stock. This brings to mind protecting the stock properly and timely.

Shedding. No humane man can enjoy the light and warmth of his hearthstone in dark, cold, and stormy nights in Winter when he thinks of shivering horses, cattle, sheep, and swine out in the bleak fields and yards without a comfort above or around them. There is no protection so economical and complete as an elaborate barn that may contain both the animals and their food and water so completely that the attendant may care for them comfortably in the severest weather without going out of doors. Such barns, however, are beyond the reach of some; therefore more cheaply-constructed sheds must be made. In the West straw sheds are often made; formerly they were quite the rule for stock farmers. They were often quite rude, but cattle feeders were able to produce as good beef in a straw shed as they can now with costly barns. Horse stables, cow sheds, sheep and hog shelters were cheaply made. They had to be renewed every year, and unless carefully constructed would leak terrible. In the States of Iowa and Missouri, where coarse grass could be obtained, a thatched roof with board sides and ends answered a very good purpose. A common board roof, with board sides, may be made quite comfortable quarters for stock. In the West sod houses, sod sheds, and stables are both dry, warm, and quite comfortable. These are made below the surface of the ground, and only the roof is of earth and sods.

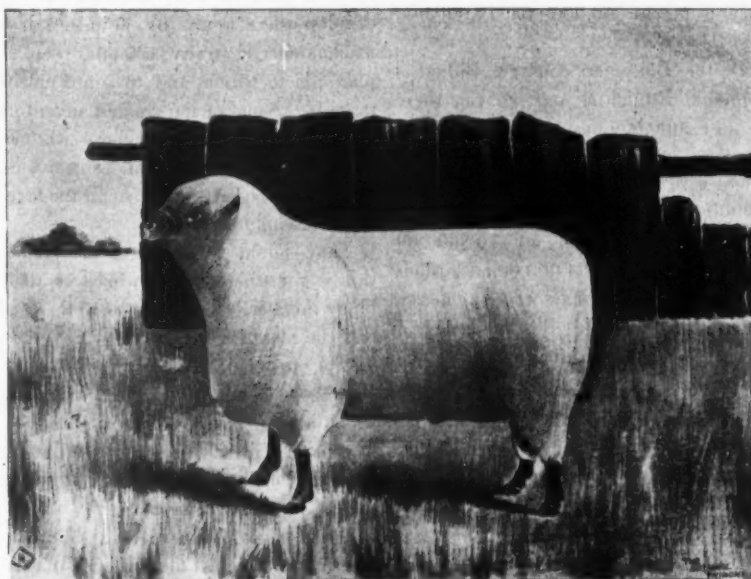
Some ingenuity and industry will enable a man to make pleasant quarters for stock out of brush, pine, straw or boughs. On the plains necessity has led the stockmen to erect barns with corrugated iron roofs and sides. The exceeding cheapness of iron lessens the cost below that of boards and shingles. It is not unusual in timber countries to find very cheap and good log barns with clapboard roofs and chinked and daubed walls. Of this kind there are some very large, neat barns, and in every way sufficient for the protection of farm animals.

Having mentioned these various plans of sheds, it may be that some suggestion may come to the reader that suits his wants and possibilities.

SHROPSHIRE SHEEP.

Something of the Early History of that Famous Breed.

The origin of the Shropshire breed of sheep is believed to be the Longmynd, or Mound sheep, one of the varieties of sheep found in Staffordshire, England. They were originally horned, with black faces. They were denizens of Cannock Chase, a section possessed of a good climate and favorable surroundings to a heavy heather sheep. The fleece of this sheep at the time it first attracted attention weighed three pounds. The carcass required three years for maturity. They were a healthy, hardy sheep. The changes of English agriculture and the demand for larger and better supplies of animal food for the people encouraged the improvement of breeds of sheep.



This breed was equal to the emergencies of the times. The time of maturity was reduced to one-half the former time and the fleece was increased also without loss to its former excellence. How all this was done is not carefully explained. It is no injustice to the breed to presume that crossing was liberally resorted to. Some contend it was due to crossing with the Southdown. This is probably true, since it very much resembles the best specimens of that breed. For a long time there was a lack of uniformity in the type of these sheep; but in time all this disappeared as breeders came to work systematically upon one line to a given standard. While this was being inaugurated much indiscrimination had been practiced and many strains of good sheep produced, but no two alike. The Shropshire sheep had long been looked upon by the farmers as the "rent payer;" but the Royal Agricultural Society would not recognize them by giving their favorites a separate class in the Canterbury shows.

In 1860, however, this recognition was afforded, and an impetus was given to the breeding of pure Shropshire sheep. One cause of this delay in perfecting the breed was due to the fact that no one took the lead in advancing a special type for the breed, as Bakewell and

Ellman had done for the Leicester and Southdown.

Previous to this, in 1853, a decided advance was gained by Messrs. Foster and Meire's success in winning all the prizes in open competition with down sheep. These sheep all descended from Mr. Meire's breeding. It was due finally to the course of a Mr. Adney, who stuck to the Shropshire as he found them, and made his improvement by a severe system of selection. His good judgment and persistence was amply rewarded in the favor which his stock received at the hands of his countrymen. Others did the same, and the reputation of the breed was rapidly established and upon a lasting basis.

The Shropshire sheep are in great favor with good farmers wherever mutton sheep are wanted. The ewes are

the ears are good size, thin, and well out from the head, and the style is like the Southdown.

The Shropshire sheep have been a wonderful success in the United States. Since their introduction they have rapidly grown in public estimation. They have been fortunate in getting the highest recognition from the most intelligent, progressive breeders and from the average farmer of the country. This is the best of all. A sheep that helps the breeder and not the farmer is or ought to be discarded.

The Flock Book of the American Shropshire Registry Association has done valuable service for the breed and for the people. THE AMERICAN FARMER testifies to the enterprise and push that has shown such wonderful results within 10 years.

Prosperity in Kansas.

Secretary Mohler's last report of Kansas crops for 1892 shows that Winter wheat from 4,000,000 acres yielded 75,000,000 bushels. At 58 cents per bushel it made a net average of \$10.73 per acre.

Kansas this year will gather 125,000,000 bushels of corn, and expects to export 20,000,000 bushels, worth \$8,000,000.

Assuming that oats, broom corn, flax, castor beans, hay, potatoes, horticultural products, garden products, horses and mules, and the products of live stock bring as much this year as last, our farmers will clear from this year's work \$10,000,000 more than last year.

Kansas sugar of the grade denominated "fair refining" brings 3½ cents per pound in Chicago, and nets the Kansas manufacturers 3½ cents.

Sugar making is progressing very satisfactorily at Medicine Lodge. The average of first sugars during the first three weeks of the season was 93 pounds per ton of cane that went over the scales. The yield of seconds will probably be about 25 pounds per ton, making the total yield about 118 pounds.

The Ice Pond.

The season approaches when the ice supplies for the year shall be gathered and stored. The importance of sanitary ice becomes a question of importance requiring the utmost cleanliness. If no pond has been made it is high time that this matter be attended to so the Fall rains may fill it before freezing weather comes. If a pond has been on the farm it should be emptied of water and thoroughly cleaned out that it may be filled again with water and properly settle.

Only by having clean, pure water can pure, healthy ice be obtained for home use. Filthy water can only give filthy ice, endangering the health of the family, adding to the doctor's bills, and possibly more sad casualties.

In 1891 New Zealand shipped: Mutton, 86,282,935 pounds; lamb, 12,068,308 pounds; beef, 11,847,839 pounds. In 1890: Mutton, 81,010,844 pounds; lamb, 10,013,146 pounds; beef, 9,910,766 pounds. Total gain in 1891 was 9,275,000 pounds.

THE AMERICAN FARMER.

"O fortunatos nimium sua si bona norint agricolas."—VIRG.

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OUR FOREIGN COMPETITORS.

If the Alliance movement does not spread like a prairie fire among the British farmers it will be because the agriculturists of those islands do not believe that any political departures can remedy the evils of bad crops.

The year 1891 was a very bad one for them, but 1892 has been even worse, and the prospects for 1893 are dismal. The price of grain is not only very low, but the farmers will have little of it to sell. This year's wheat is only 82.7 per cent. of an average crop, or 10 per cent. lower than last year; barley, .97; oats, .93; potatoes, .95; beans, .91. This means a loss to the farmers of the United Kingdom of \$10,000,000, even at the low prices now ruling for grain. The London Times says editorially:

The outlook for the coming Winter is thus gloomy for all classes, for employers and for their working hands. It is on the farmers, however, that the most heavy burden will fall, and it becomes a grave question as to how many of them will be able to bear it. They have managed to struggle through a succession of bad seasons, borne up by the hope of more favorable times to come.

The reports prove only too conclusively that they must look once more to be disappointed. What they have to bear is something more than the last straw. It is a weight which would be crushing by itself.

We cannot doubt that for very many of them the farming operations of the year will result in a heavy loss, while those of them who are still minded to try their luck for another year are making a bad start already, since the state of the ground is such that they are not able to make progress with their Autumn sowing.

Many of them have been living on their capital, and have found it year after year shrinking steadily in amount.

It is a grave question what they are to do.

Though much of the year was very discouraging to French farmers, owing to hot weather and drouth, yet the yield has been unexpectedly good, and will reach 300,447,157 bushels, against 213,558,312 bushels in 1891. The average weight is 62½ pounds per bushel, against 61½ pounds in 1891, and the average yield per acre 16½ bushels.

As the total yearly consumption is 335,000,000 bushels, France will have to buy abroad from 33,000,000 to 38,000,000 bushels.

German farmers have done well, raising 101,750,000 bushels of wheat, against 85,000,000 bushels in 1891, which will leave only about 12,375,000 bushels to be bought abroad.

Austria's crop is about the same as last year, 49,500,000 bushels, against 49,551,250. This will require the importation of from 33,000,000 to 41,000,000 bushels.

Hungary, which last year raised 124,000,000 bushels of wheat, this year raised 137,000,000 bushels, and have 55,000,000 bushels surplus, which, after supplying Austria's needs, will leave only from 14,000,000 to 16,000,000 bushels to export.

In the Danubian country, Bulgaria, Rumelia, Rumania, and Servia, there were 111,000,000 bushels of wheat raised this year, against 106,000,000 last year. There will be between 19,000,000 and 22,000,000 bushels for exportation.

Italy's wheat crop is 110,850,000 bushels, against 124,000,000 bushels last year. She will have to make heavy importations to supply this deficiency.

The Russian wheat crop is much better than last year, but still far below the average, and it is doubtful if the Muscovites will have any grain to sell.

SITUATION OF AMERICAN SHEEP HUSBANDRY.

A few years ago it was thought the pioneer period of wool growing was passed in this country, and that no changes were likely to occur in the raising of sheep for a long time to come, if ever. Just why such a complacent view of the situation should have been taken does not now seem as possible. The change came from the most natural causes, but were unseen by the more thinking people of the country. The change was strongly opposed, and the facts as they became more apparent were discredited. Gradually the industry took on new form, and gradually prosperity began to return, and fortune again smiled upon the sheep growers. The most fossilized wool growers discovered that a sheep had to have mutton qualities as well as wool qualities to meet the demands and to secure desired profits. This was the formula of a profitable sheep either in pastoral or agricultural sheep husbandry. The prospects for successful sheep raising continue on this line, and in all probability will, since it is in accordance with the natural fitness of things agriculturally and commercially. We believe the mutton industry solves the question of permanent prosperity for American sheep raisers.

PROVIDE A WORKSHOP.

Next to a good library, a good workshop is as profitable an investment as a farmer can make. Its profits are both direct and indirect. It pays directly in the money saving in making repairs and improvements that without it will cost both time and money when done in distant shops. Indirectly it will pay in teaching the farmer and his sons many useful mechanical facts. They will learn things about the use and care of their tools and machinery by an hour's repair work in the shops that never would occur to them in the field. It will give the boys an interest and amusement that will employ to the best advantage many leisure hours, and help greatly to attach them to the farm and farm life. It will develop their minds by arousing their mechanical ingenuity, teaching them to plan and to reason, and to adapt means to ends. Some of the greatest inventors of the world were farmer boys who developed their mechanical propensities, fashioning needed appliances for the farm and household.

They should be encouraged to make things for themselves—whatever their fancy dictates. The time is well spent and the material well used which they devote to their little wagons, carts, cross bows, sleds, and other things in which a boy's heart delights. The boy who makes himself a nice sled will more than pay back all that it has cost by his skill in repairing some reaper or rake.

The workshop should be as complete and comfortable as the farmer's means will admit. If possible, it should be a well inclosed, well-lighted separate building, stored with as complete an assortment as possible of wood and iron-working tools. The list of what can be used to advantage is almost endless, but a beginning should be made with saws, augers, hammers, planes, chisels, wrenches, whet and grindstones, and similar indispensables. An anvil and a portable forge should be added if they can be afforded, and so on up until we come to that crown of economy and convenience, a wind wheel, which will pump water, churn milk, saw wood, grind feed, turn the grindstone, shell corn, and so on.

The well-equipped farmer has to be a fair mechanic and machinist among his other varied accomplishments.

THE different Counties in Scotland pay different wages. The range of prices paid run from 15 shillings to 26 shillings per week, according to ability. In the Highlands in a mixed stock, including ewes and wethers, a shepherd can manage from 1,000 to 1,400; if only ewes a shepherd should have 200 or 300 less, with an assistant at lambing time.

AMERICAN flour is the best in the world. European Nations are struggling to secure for their own millers the work and profits of grinding up the wheat which is imported; but the old country millers are wedded to the ways of their forefathers, and will not, or cannot, learn the improvements which the live, progressive, American millers are constantly making in the manufacture of flour. Consequently, European bakers and their customers will prefer American flour in spite of all the regulations of their Governments. In the early part of the century we exported only about 1,000,000 barrels of flour annually, principally to the West Indies and South America. The Irish famine of 1847 started large shipments to Europe. In 1856 we were sending out of the country 6,000,000 barrels. By 1876 this quantity had risen to 8,000,000 barrels; by 1886 it was 10,000,000 barrels; last year 12,000,000 barrels, and this year it is expected that it will reach 15,000,000 barrels. If ever the Chinese begin to understand that wheat is a better food than rice, the flour shipment from the Pacific Coast will assume enormous proportions.

EDWARD ATKINSON, the distinguished economist, is trying to convince the English people that they make a great mistake in buying American pork, instead of American maize, for food. He says that it takes 1,000 pounds of maize to make 200 pounds of pork. The valuable food elements are protein and the carbo-hydrates. Maize meal contains—

Water	14.5 per cent.
Protein.....	9.1 "
Fat.....	3.8 "
Carbo-hydrate.....	71.0 "
Mineral.....	1.6 "

While pork contains—

Fat.....	76.5 per cent.
Protein.....	2.8 "
Carbo-hydrate.....	0.0 "

This indicates that the eater of the maize transformed into meat loses nearly all of the most valuable portions of the grain.

THE Australian Government is building a wire netting fence 8,000 miles long to divide New South Wales from Queensland to shut out the jack rabbits from Queensland. They have been such a pest to New South Wales sheep pastures that the Government has taken the question in hand to fence them out, or in, as it may be called. They were taken there by the colonists about 15 years ago, and under the favorable conditions of climate, etc., they have increased beyond all calculation and become a formidable pest, as they destroy the pastures and thus destroy sheep raising. Lands in the rabbit district have deteriorated from £10 per acre to less than £1.

FALL PLOWING.

It would seem hardly necessary to mention this subject to practical farmers, but there are many really good farmers who do not practice the Fall plowing of lands intended for next Spring's planting. This subject is specially important this Fall, owing to the conditions of the soil by reason of the extreme rainy season of the past Spring and Summer. The lands, especially clays and loamy soils, are badly run together and break up in terrible clods. They will be no better next Spring, unless turned over and let the frost have a chance at them. It will require two or three years to get the lands in really good shape again. Many farmers made the mistake last Spring and Summer of working the ground when too wet.

In some instances where there is a good supply of humus—vegetable matter—in the soil, it might be well to burn the trash, weeds, burrs, etc., that may be on the land before plowing at this late period. Had these been plowed under three months ago before the seeds were mature the coat of green stuff would have been a valuable addition to the fertility of the soil. It will help some now, but the seeds are all ripe, and will produce a crop next year. It, therefore, is a question which plan to pursue; whether to plow under this dry stuff for manure, seeds and all, or to burn and thus clean the land. Then, the insect pests, their eggs and larva are deposited in the soil, grass, and weeds. Plowing will kill some of them; burning and plowing would destroy the most of them. It is well known trashy lands are more infested with cut worms and other pests than clean lands.

The lands can be plowed cheaper now than next Spring. The teams are stronger and help is more plenty. Turn the land up in the roughest possible form, and if the Winter should not be very rainy the land for oats, barley, and Spring wheat may not require plowing again in the Spring. A saving of labor and saving of time, to say nothing of getting the Spring grains in earlier is an important matter that commends the late plowing to all farmers. A better seed bed will be secured at any rate, whether the land is intended for oats or corn. Fully one-half of the work will be saved in next Spring's planting, and the certainty of a crop will be greatly enhanced. Should next Spring be wet and cold, a late season, the farmer that has pushed his work as far ahead as possible this Fall will feel that he is not behind in Spring work.

The use of the cultivator, spring-toothed harrow, and like machines can put a piece of Fall-plowed land in the best of shape for sowing or planting at a trifling cost compared with plowing, harrowing and rolling land in the Spring.

These lands that were soaked with water and packed by frequent torrents of water last Summer will break up next Spring in the same cloddy condition they do now. They will be hard to break up, and the teams will be jaded at the very commencement of the season when they are in the weakest condition. This will damage the teams for the whole year's work.

The best farmers push their work and avoid the emergency of letting their work push them. This is why we wish our readers to practice every method that can further their best interests.

WORK OF THE SELF-BINDER.

Edward Atkinson claims that the self-binder has done more to reduce the cost and price of wheat than any other one thing. The final element in wheat production is the amount that the farmer can harvest. In the old days of the sickle the amount that he could gather into his barns, with the assistance of his sons and such hired help as he could secure, was small. The cradle enabled him to garner a great deal more, but still he was limited by what his help could rake and bind. The reaper was subject to the same limitations, and it developed a class of men who received high wages in harvest time, and either did nothing or worked occasionally and for moderate wages the rest of the year. The self-binder transformed all this, relieving the farmer of the great expense of the hired binders, and his family of the labor of cooking for them. Henceforward the only limitation to the wheat crop of the United States is the number or acres upon which wheat can be successfully grown. We only use now about 60,000 square miles of our 3,000,000 for wheat raising, but the area is rapidly extending. The self-binder came into use in 1876, and our wheat crop the next year was 364,000,000 bushels. By 1880 it had mounted to 498,000,000 bushels, and last year to 611,780,000 bushels. What it will be in the near future can only be guessed. In the meanwhile 100,000 self-binders are being made by the factories every year. Mr. Atkinson holds that by their aid the farmer makes more money with wheat 34 shillings a quarter in London, than he did in 1870, when wheat was 52 shillings a quarter in London.

Book farming and sheep raising on paper are all good enough as far as they go, but the man that does as he is told in the books without using his own best judgment is going to be badly left. The practical suggestions in books and papers must be applied to the operations and practices of life only so far as suits each man's case. This is all they are meant for.

DIVIDING THE PASTURE.

Months ago, when grass was knee-high, THE AMERICAN FARMER suggested the propriety of sub-dividing the sheep pasture and holding the larger part of it in reserve against a possible shortage farther on in the season. If any farmer saw the point we raised and did as his farm paper advised, he is to-day reaping the reward in generous grass supplies, while his neighbor's pastures are burned up and his stock are growing poor.

On the subject of pastures, it cannot be too often mentioned that pastures do not receive the attention they should with stock raisers. A variety of grasses that afford a good bite of grass at all times of the season should be grown. One or two varieties cannot do this in drouthy season. Blue grass on limestone soils holds the first place as a pasture grass; but unless there is a superabundance of it there will come a time in Midsummer when it does not grow, and if heavily stocked the supplies must fail. If, however, some attention is given to mixing varieties, such as come in a succession, all this may be remedied even in a dry season. Orchard grass should be more favorably considered by all provident stockmen. The clovers can be relied upon to find a place in any blue grass pasture. At times it may seem that they have died out; but when most needed they are there to eke out a closely cropped blue grass pasture. Some of the clovers will need to be re-seeded every year or two, but not all. Let it be suggested here that more interest be taken in this matter to the extent of trying experiments on this line. Much can be done at small expense with some labor to provide better supplies of grass in such a drouthy season as this year has proven. In this country drouths are frequent enough to demand some thought on this question.

WHAT a revolution it would make in this country if the people should suddenly take to insisting that candidates for the office of Roadmaster should be men who have really studied the science of road-making, and be interested in having the roads improved. It would be more of a revolution than the abolition of slavery, for it would abolish the intolerable slavery of 65,000,000 of people to the worst roads in Christendom.

OUR exports in pork have increased from \$6,306,946 to \$8,332,020 since France and Germany have removed their restrictions. This certainly is very favorable to our pork industry, and considering the short time in which it has occurred, it now looks as though our exports of this article will be greater than it was before the restrictions were placed on it.

THE annual Grain Fair at Vienna, Austria, is the most important event of the year to the farmers and grain men of Eastern Europe. This year it was held Aug. 29, 30, and the opening speech, made by Herr Naschauer, President of the Grain Exchange, has set all the papers of Europe talking. He said that the failure of the Russian grain crop had raised high the hopes of all the grain growers of Europe of a strong advance in prices. But these were blasted by the enormous quantity of wheat sent from America. This seemed to indicate that competition with America was well-nigh hopeless. In 1890 the United States had 36,000,000 acres in wheat. In 1891 it was 40,000,000, and could be increased indefinitely. The American railroads make distance of no account, by their facilities for transportation and lowness of rates. The charge for transporting 100 kilograms (220 pounds) from St. Louis to London (a land journey of 1,500 miles and a sea voyage of 3,460 miles) varied between two shillings and two shillings and a sixpence (from 50 to 62 cents). The United States were also heavy exporters of maize. Last year they began sending rye abroad, and were also in the market to sell barley. Herr Naschauer believed that it would be useless to expect the European railroads to help the farmers in this bitter competition, as it would be impossible for them to make as low rates as prevail on the American roads.

BUREAU OF INFORMATION.

Albert Jackson, Mobile, Ala.—The Australian ballot law received its name because it is used in Australia. It is really modeled, however, on the English system, which was adopted long before the Australian plan was formed.

J. H. Omnee, Shelbyville, Tenn.—Chilled iron is iron which, by sudden cooling, has undergone a change of crystallization near the surface, which greatly increases its hardness. A very thick iron mold is used for cooling this iron, which is called a chill. Chilled iron balls and shot are used quite extensively in Europe, because, on account of their intense hardness, they can readily pierce armor plates. The form of these is a cylindrical cone, the bottom is flat, and in the center of the bottom is a hole that is closed with a plug. This hollow in the center enables the projectile to cool uniformly and renders it less liable to be split. All these projectiles are made of carefully-selected iron, and are cast point down. The mold is made of very thick metal, which extends from the point about half way the length of the projectile, and the rest of the mold is made of sand, and the sand mould is also used to form the interior. The iron cooled off thus rapidly is perfectly white on the point, is intensely hard, has great crushing strength, though not a little brittleness, so that when a shot or shell strikes a projectile of this kind obliquely the top or point, hard as it is, is often broken short off.

James Bump, Arcola, Ill.—We have not the slightest faith in the bichloride of gold remedy for drunkenness. It is as big a humbug as the blue-glass craze, and is only kept alive by the persistent advertising of those who have put a great deal of money into inebriate "institutes" for making shekels out of drink victims. The only way to cure drunkenness is by cultivating the will power and self-respect of the drunkard.



A Prayer.

A little sorrow came to me to-day,
A little blow, not meant, perhaps, but given;
And after it was o'er I could but kneel to pray.
The friendship of long years was riven.
"Bend over me, dear God."

Kneeling it seemed so long before the words would come;
The heart was hot, the thoughts were restless, too,
I tried to find some soft forgiving words—some
Words which I might speak and never rue;
They would not come.

I knelt on still, I wanted so to pray;
But I could not forgive, it hurt me so.
"Lord, I forgive!" I could not, could not say.
"Bend over me in Love."
But still the attitude of prayer I kept;
I felt that God would know I meant to pray.
I think I may have gently wept,
But "I forgive," I could not say.
"Dear God, give me the strength."

A soft sweet peace came over all,
My heart was full, I could not see.
"Dear Father, do you hear me call?
Forgive, forgive Thou me!
I thank Thee, thank Thee, God."
And sweet peace came.

—Delaide Croft.

By the Editor's Fireside.

THERE is a certain class of people in the world who seem to have small thought for the rights of others; that is, so far as personal feelings are concerned. They are good sort of people on the whole; they will not do anything that will make them amenable to the law, or even to public opinion; they will not steal, nor lie, nor slander, and they are eminently respectable. They may have many virtues, too; that is, they may be industrious, energetic, and even generous in a way. In fact, they would be called good men and good women, and yet they are lacking entirely in what I call regard for the rights of others, in that they never make allowance for or never observe the little delicate amenities of life.

Perhaps I may explain my meaning better in another way. I know a family—probably most of you who read will be able to recall just such an one—who are fond of each other, but who are precisely the kind of people I speak of. There is nothing in the house, nothing that belongs to one of the family that is sacred to the others. Does a letter come in the absence of the daughter or the son? Forthwith it is opened and read, because, of course, there are no secrets among them. No account is taken of the feelings of the writer whose words were intended for one alone, and who might, for aught the others know, inscribe upon those pages some thought, some emotion, which it would be exquisite pain to know had become the property of indifferent persons. No matter how pretty an article of ornament or wear is the property of one, it is appropriated by any other without a question of right in the matter. Of course, this habit is the result of training from childhood. The parents have never taught their children by precept or example that they are to respect each other's individuality.

I have often heard the question discussed as to whether the correspondence of a husband and wife should be held sacred, each by the other. It always seemed to me that the way in which this subject was viewed showed the growth of the husband and wife in their conception of the sacredness of each other's rights. I know that most wives will say, "I have no secrets from my husband," and that many men give to their wives the most absolute freedom in regard to the opening of their letters. But it does not seem as if it were right, to say nothing of the lack of consideration toward those who may not regard the two as absolutely one, even while glad of the harmonious relations existing between the married pair. Friends often desire to impart something to the wife which they would not want to tell the husband. Not that they are afraid to trust him; not that they desire to bring something alien into the life of the wife, but simply because it is impossible to feel the same freedom in speaking of themselves and their own affairs to the husband

of their friend as they have in speaking of them to the friend herself. Letters are absolutely personal; they must be if they are to possess the qualities which make them precious in the eyes of the receiver, and if a letter is first opened by one to whom it is not addressed, it is certain that the keen zest of anticipation is destroyed for the rightful owner. Somewhere I have seen it remarked that one might as well wear second-hand clothing as to get a second-hand letter, and it is true.

In fact, this regard for the individuality should be one of the things taught to every child, so that it may become a rule of life. Any lack of delicacy in this respect has a blunting effect, and for this reason these little observances should be just as closely attended to in the family and between intimate friends as among those whose relation is more formal.

I would carry this respect for individuality at home still farther. Each member of the family should, if possible, have a place dedicated to her own use, where, in those hours that come to each and everyone of us when only solitude and silence seem bearable, she could retire and be absolutely unmolested even by those who are nearest and dearest and most important in their influence upon her life. This same thought of individuality should prevail in everything; she should have her own clothing, her own books, letters, papers, any or all things that bear the impress of her own taste or her own liking.

I do not think this carrying the idea too far; it does not, as some imagine, diminish love, cultivate selfishness, and make family companionship stiff and uncomfortable. It is only delicate consideration for the individuality of others to which each one has a God-given right from infancy.

* * *

I do not suppose that there are many women who do not desire to attend the Columbian Exposition during the Summer of '93, when the whole world will be alive to the importance of the showing made there of the progress of all nations, and more especially when the past and present of woman's work will be so fully exhibited and in a way to make her real position in industrial affairs understood as never before. Few, indeed, there are who will not be ready to make sacrifices in order to see all these things with their own eyes.

When considering ways and means, the great army of wage-earners, the working girls, and women who will be obliged to look out for themselves, will find a difficulty confronting them which it will be hard to surmount. The Board of Lady Managers residing in Chicago felt that it was in its province to look after their accommodation in this direction. Accordingly, after due consideration, what is known as The Woman's Dormitory Association of the Columbian Exposition was organized. The plan is briefly as follows, and I explain it here in order that the many who either have not heard of it at all or do not understand its scope may receive the information:

Buildings are to be erected near to the Fair grounds capable of sheltering 5,000 women at a time. They are to have comfortable rooms, with comfortable beds and toilet conveniences. In each dormitory will be a refined and motherly woman who will look after the girls and women who are unprotected and who may go to the Fair singly or in groups. The company will issue \$150,000 worth of stock in shares of \$10 each. These shares will be taken at any dormitory of this association in payment for lodging bills. Two persons only may be taken at a time on a single share. If anyone does not use the face value of one share during her stay, it can be made over to another to use the balance. The rate per day will not exceed 40 cents to the stockholders, and they will be given the preference over others. Each person must engage her room at least one month before coming, in order to be sure of accommodation at that time. After the value of the stock has been used, the share still stands upon the books and the holder will be entitled to her pro rata share of the profits, if a surplus remains after the enterprise is closed.

The names of those having this in charge is a sufficient guaranty of good intentions. They comprise those of Mrs. Potter Palmer, Miss Frances Willard, Mrs. Matilda B. Carse, Mrs. Helen M. Barker, and other well-known and prominent women. The Treasurer of the Association is one of the most prominent bankers in Chicago, Mr. Elbridge G. Keith.

As may be seen, this will give an opportunity for many women workers to see the fair without paying exorbitant prices, which it seems probable will be demanded almost everywhere where strangers are lodged. Throwing out any possibility of money returns upon the stock, the possession of an opportunity for a bed at a reasonable rate is worth having. Of course, those who take stock in the beginning will be the ones who will have a choice of the month in which they can be accommodated. The object is not money-making in any sense, but simply to accommodate reasonably the vast army of women who will desire to go to the Fair, and will not be able to pay extortionate prices.

HINTS FOR THE HOUSEHOLD.

Some Conveniences and Some Easy Ways of Accomplishing Things Described by the Editor.

Little things often make all the difference in the world in the ease with which work is accomplished, but especially in the household. There the duties of the

day are so various, they cover so much ground, are so different in character, that to accomplish them in the best way requires not only physical but a good deal of mental exertion. This can be often diminished to the minimum by some little contrivance of small cost and little effort. Among minor things may be mentioned what very few housekeepers have, and that is large covers for furniture made of cambric or muslin to cover the furniture during the process of sweeping. Sew together two widths of cambric from three to four yards long and hem them. Square ones may be made for bureau, center table, or large, roomy chair. It is easy for the housekeeper herself to know just how many and what size she needs for her own individual use. Some persons find it very convenient to leave these covers over the furniture in the guest chamber, and then when the guest arrives it is an easy matter to gather up the dust in the covers, leaving the apartment as clean and free as if just swept and dusted.

Of course, paper muslin will do for these covers, but it will be necessary to starch them in order to keep the dust from sifting through; just as soon as they become thin the good effects are lost. Of course they will not, if well taken care of, need washing often.

* * *

Old newspapers multiply in the most unheard-of manner. At least if not unheard of, the way in which they gather themselves together is something astounding. This is true if only two or three are taken in the family; but when there are more, and when periodicals are taken also, it really becomes an important question to know what to do with them in a useful way. Of course they can always be burned. Newspapers have, however, many uses. They may be wrapped around ice to keep it from melting; Winter garments may be kept nicely by pinning them into newspapers; they may be placed under carpets over the regular lining, and the printer's ink, which is considered a preventive of moths, will do service in that way. Of course good housekeepers know that they are of good service in polishing windows after washing. Ice water in a pitcher which it is desired to keep in case of sickness will remain cool all night if it is wrapped in a newspaper and the top twisted over so as to exclude the air. They will also make a very nice comfortable when put between layers of cheesecloth. At first the rattling may be a little annoying, but in a short time that is all gone and one cannot have a warmer cover. A thin layer of cotton next the cheesecloth and on each side of the paper renders it pleasant to the sleeper. I saw somewhere not long ago that after freezing ice cream, the dasher can be removed, the stopper put in again, and then, covered with a close packing of newspaper, there will be no necessity to use more ice. Some housekeepers pack a tub three-quarters full of ice and then stuff the remainder with papers placed in tightly. These are ways of making them useful when they cannot be given away to those who would enjoy the reading.

* * *

Very many good housekeepers fail in boiling eggs properly, and it is really a rare thing for them to come to the table in exactly the proper condition. When a soft-boiled egg is wanted, wash it in cool water and then put it in water that has been allowed to boil, but removed from the fire so as not to continue boiling. Let the egg lie in this water for 10 minutes, and when it is taken out it will be found to be soft and tender, and easily assimilated. If you want the egg hard, let it remain 25 minutes in water that is just below the boiling heat; at the expiration of that time drop it into cold water so that the shell will come off easily. If putting it into cold water seems to chill it, or if a quantity are to be prepared, then it is well to drop them again after peeling into a bowl of hot water to remain until needed. Lay the eggs upon a platter upon which are a few sprays of parsley and scatter a few over them. This makes a very pretty dish, and one that is exceedingly appetizing. Another nice way to serve eggs is to halve those that are boiled, allowing three halves to each person at the table. Put these sections, yolk side upward, on the platter, dust them with salt and pepper, and lay a bit of butter on each yolk, or make a cream gravy and pour over them in a deeper dish which will allow for the use of this dressing.

* * *

Every cellar in a house, whether it be large or small, should contain a swinging shelf stoutly held by supports at the four corners, which are nailed to the floor joists above. This must be three feet wide and eight feet long, but strongly fastened, as it will be generally weighted down heavily with jars of fruit and other things that the housekeeper will find it most convenient for. A very good addition to this swinging shelf is a cupboard closed with a door, into which can be put cans of preserved fruit and those things which keep better in the darkness. Besides this swinging shelf, what might be called a wire cupboard is of the greatest convenience. This is built like a double swinging shelf. On one side have frame doors hanging to swing outward; cover the back and the doors with wire fly netting which is galvanized. This will not rust and will last many years. If the housewife is not able to go to the expense of having wire netting, mosquito netting will do, but it will have to be renewed frequently. This cupboard should be from five to six feet long and one and a half wide. Those things that cannot be kept without molding or souring in the kitchen pantry will keep well in this place secure from flies. At first thought many housekeepers will feel that they can get along without these places; and so they can if they have ample room in cool cellar closets or in large refrigerators to set everything away that has been left over upon the table; but otherwise the convenience will be found far greater than the cost.

Interesting Facts About Authors.

Mrs. Frances Hodgson Burnett is so well known to women and children

everywhere through her "Little Lord Fauntleroy," to say nothing of her other works, that something about her personality and what she is doing is always welcome. At present she lives in Washington in a beautiful house on one of the handsome avenues with which that city abounds. One enters a great hall filled with old-fashioned furniture of carved wood, much of which Mrs. Burnett brought over from Italy; indeed, a great deal of her furniture has been gathered by her in some of her journeys. Her own especial room and workshop is on the third floor, and a very luxurious and beautiful room it is. The walls are hung with pictures, and on the mantel are photographs of her friends. A broad, flat-topped desk of oak stands at the side covered with papers, and here Mrs. Burnett does her work. Her handwriting is more like that of a schoolboy than either a business or society woman. She writes very easily; in fact, says that her pen seems to write her stories itself. For the last four years she has felt little like work and has done comparatively little. The death of her son and her own accident in London has taken from her much of her ambition. She says that it is no credit to her that she writes so easily, but that it is a gift and not the result in the least of hard work.

There is a great difference in the way authors compose their works. Some take much time for preparation, copying and recopying in order to make the changes which they see are desirable upon looking over their work after it is finished. Some, however, compose off hand, and never rewrite. Not many are able to use the typewriter when composing. Mrs. Katharine S. Macquoid, the popular novelist, is one of those who has trained herself to write with a typewriter as she composes. Before she begins all the preliminaries of her story are settled. She has her plot very clear in her head and has made herself very well acquainted with her characters. Then she is able to produce her copy very rapidly, and though she reviews it very carefully, still there are comparatively few corrections to be made. Mrs. Macquoid usually gives from five to six hours daily to her work, rarely using the evening hours for writing.

Pretty Table Arrangements.

Sometimes little matters of social arrangements will puzzle a housekeeper more than something of much greater importance. There is no one but likes to have her table arrangements pretty and in good style. She has a pride in this which is the same in quality as that of a person in any profession who desires to do the work in the best manner possible. Apropos of this thought comes the question in regard to the center piece and doilies which are now used so extensively. Of course, these must depend somewhat upon the size and shape of the table upon which they are to be placed. If it is round or oblong and the round center piece is employed, the latter should measure 20 inches in diameter; a square one may be anywhere from 18 to 25, while for both, doilies may be seven and a half inches square, or still smaller ones are pretty of not more than five and a half inches, round ones being in the same proportion. If doilies are used, as is now the style, under the tumblers they should be still smaller. Many of these are made in the shape of leaves or flowers and prettily embroidered either in white silk or in colors that give a very pretty effect to the table, which has been first covered with a pure white cloth of heavy linen. The salt dishes and those for pepper have also individual doilies which are made very much after the same fashion, the size being in accordance with the size of the dish to be set upon them. The beauty of fine china should not be detracted from by very brilliant coloring in the doilies placed beneath it. Pretty fringe or lace borders are very effective for such dishes. These little doilies, while involving a good deal of work, may yet be made in the odds and ends of time which many housekeepers have, and which could not be utilized for a larger and more pretentious piece of work. One can be finished and laid away and another taken until the whole set is completed and ready for use. The worker will be surprised to find how much she has accomplished in this way.

WORK FOR BUSY FINGERS.

Some Useful Articles for Home Decorations and Friendly Gifts.

BATHROOM BAG.

Get a piece of maroon or yellow canvas a yard long and 10 inches wide. Fold it in two and then paint the side of the bag which is to be turned away from the wall, or applique some pretty pattern of leaves or flowers or animals cut out of white broadcloth. The shading must be made with the silk after the cloth is fastened in place. Line it with stiff canvas and over that put a lining of silicia or silk. Sew it together upon the three sides, thus making a bag 18 inches long and 10 inches wide. Finish with a heavy cord, using cord also to make loops for its suspension. The bottom may be trimmed with tassels if desired. This bag is very useful for holding scraps or anything which needs to be put out of the way, not only in the bathroom but also in the bedroom, or the room where the little folks play. Another bag, which is very useful in the bathroom where there is not room for a hamper, for soiled clothing is made upon a much larger scale. The material is brown linen, or dark-blue denim may be used, or again Bolton sheeting. This one should be made with a stiff, flat back, the stiffness being produced by an interlining between two pieces of the material. The back should be at least 24 inches long and 18 inches wide. The front is made of the same material once and a third as wide as the back and two-thirds as long. This should be gathered, or rather shirred, upon strong elastic cord both top and bottom, and then sewed to the back upon three sides. Across the bottom may be tassels made of cotton which will bear washing. It is to be suspended by cord looped through three eyelet holes

upon the top of the bag. The front may be ornamented in any way by embroidery or painting or may be left plain. This bag is very serviceable for holding soiled collars, cuffs, or towels.

POSTCARD CASE.

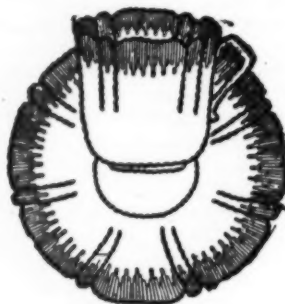
Cut two pieces of cardboard a little larger than a postcard, and from front piece cut off the right hand upper corner. Cover each piece with olive-green India silk and work the upper one with golden-yellow flowers with green stems; overhand the pieces together and cover the edges with gold cord.

OYSTER-PLATE DOILY.

Stamp a piece of fine but sheer linen with an oyster-shell pattern. Embroider the edge with white silk in the long and short button-hole stitch. Use shadings of seaweed-green silk.



OYSTER-PLATE DOILY.



CUP AND SAUCER DOILY.

CUP AND SAUCER DOILY.

Have fine white linen stamped the desired pattern and embroider with two shades of yellow in the long and short button-hole stitch.

BUREAU TRIMMINGS.

Many people now prefer small cushions for the bureau rather than the large ones which used to take up so much space upon the top. Very dainty little ones may be made, either square or round, not more than five or six inches in diameter, and covered with fine linen, embroidered with small figures in the Dresden patterns. Around the edge finish with a ruffle of white ribbon underneath one of lace, both being about two inches wide and gathered very full.

The top of the bureau should be covered with a cloth made also of the fine white linen, and embroidery of the same. Finish the ends, and the sides also if liked, with a ribbon and lace ruffle, put on, however, much scantier so as to lie down closely to the top of the bureau. Upon the same bureau have a pretty little china or silver dish for holding loose pins, and another for hairpins. Instead of the latter may be substituted a little basket, which a few cents will buy. Either gild or silver this, put into it white hair and cover over the top with a coarse meshed lace or the crocheted top which used to be so popular for that purpose. Upon the handle tie a bunch of baby ribbon of the same colors as the embroidery.

For the Home Table.

SPICED GRAPES.

Take 12 pounds of grapes, pulp them, saving the skins. Then put the pulp in one pint of boiling water, cook a few moments and strain through a sieve to extract the seeds. Put the skins to the pulp and add six pounds of sugar; boil slowly one hour. When done add one dessertspoonful each of ground cloves, allspice, and cinnamon. Seal hot in jars. Isabellas or Concordes preferred.

GOOSEBERRY CATSUP.

Take eight quarts of gooseberries, rubbing off the blossom; this can be done by washing them. Put in a kettle and cook slowly, adding six pounds of sugar, a little at a time, until it has cooked two hours. When done add one tablespoonful of ground cloves, one of cinnamon, one of ginger, and one pint of good vinegar. Bottle and seal.

VANITIES.

Beat two eggs very light; stir in enough sifted flour to roll out on molding board. Roll as thin as possible and cut in strips one inch wide and two inches long. Fry a delicate brown in very hot fat. Sprinkle with either powdered sugar or salt as you take them from the fat. Eat soon after frying. Nice to serve at luncheons.

FOAMING SAUCE.

Beat the whites of two eggs, but do not make them very stiff. Stir in a cupful of powdered sugar and a tablespoonful of lemon juice or a small wineglass of sherry; pour slowly in this a cupful of boiling milk, stirring continually while pouring. Serve immediately.

SAUCE FOR VENISON, MUTTON, OR STEAK.

To one tablespoonful of currant jelly add one teaspoonful of mustard, a little salt, and a little cayenne pepper; stir all together, then take sufficient gravy from the dish of meat to moisten the quantity wanted.

PEPPER HASH.

One dozen large green peppers, one-half peck of silver-kinned onions; chop these fine, then add one pint of vinegar, one tablespoonful of mustard seed, one of celery seed, one of whole allspice. Put all together in your kettle and let it come to a good boil. The onions are to be scalded in hot water before chopping. To be eaten with hash or cold meat at breakfast.

CUCUMBER CATSUP.

Peel and grate 12 large cucumbers. Lay in a deep dish with a small tea-cupful of salt. Let stand all night, then put on a fine sieve; when well drained put in vinegar to make it of proper consistency. Season with pepper. Bottle and seal.

MOLASSES COOKIES.

Two cupfuls of molasses, one-half cupful of butter, one-half cupful of lard, two tablespoonfuls of strong coffee, one teaspoonful of soda in a drop of water, one tablespoonful of ginger, one-half cupful of brown sugar, flour to roll out soft.

For Mending Gloves.

It is well to have a little basket purposely for gloves that have come to mending filled with tan, gray, and black silk, or cotton thread, for just lately cotton has come into vogue for glove mending, many claiming that it is less apt than silk to cut the kid, while it wears off and matches the color more perfectly. So says *Good Housekeeping*.

There should also be in the basket a paper of assorted glove needles, a bit of wax and a box of the tiny buttons which have been saved from worn-out gloves, as well as pieces of gloves of different colors. It is always advisable to buy gloves of the best quality and then to carefully pull them in shape, straightening the fingers, before putting them away after wearing; being sure that they are not damp with perspiration, sprinkling the inside with violet powder if there is the least trace of it, otherwise you may find your gloves mildewed, and wonder how they came to be so.

A pair of gloves treated in this way, kept in good repair, with the smallest rip properly mended, will last nearly as long again. The best way to mend button-holes that have a tendency to stretch or tear is to baste on the inside—with a fine needle always—a bit of kid of the color of the gloves. Carefully catch down the edges, stretching both patch and gloves alike, and securely fasten the buttonholes to it—cutting incisions of the proper size and sewing to the edge of the buttonholes.

If the seams in the back are torn out a piece may be put under and so carefully sewed that it will not show. A worn thumb or forefinger may be patched with a bit of another glove, and thus made to do duty as shopping gloves for some time. Silk, lisle thread or woolen gloves, if taken when first beginning to show wear, can be neatly darned, and are much more serviceable for the everyday purposes of life than cheap kid.

GOOD ROADS.

An Appeal to Railroad Managers to Aid in Securing Them.

Col. Albert A. Pope has sent the following letter to the leading railroad managers of the country:

DEAR SIR: Permit me to urge upon your attention the great importance of good roads as feeders to railroads. Throughout the United States the condition of the common country roads is the index to the prosperity of railroads. When highways are impassable, freight and passenger earnings are necessarily diminished and the price of railroad securities lowered; when the roads are in good condition merchandise is accumulated at the depots, and in moving it trains are delayed and accidents increased. A uniform good condition of roads would enable railroads to handle freights more expeditiously and advantageously.

Good roads are the means by which a country is built up populously and prosperously; bad roads delay civilization and cause districts to be sparsely settled, and poverty and ignorance to abound.

The railroad companies of this country, representing millions of employees and billions of capital, and controlled and directed by men of high intelligence, have a commanding influence in every legislative hall in the United States.

Every railway corporation can request its officers, agents, and employees to do what they can to create a right sentiment in regard to the improvement of highways in their respective neighborhoods; and all along the various lines depot masters and freight agents could report to a road department, established by the company, the condition of the roads in their towns and what is being done to improve them. These depot masters could be furnished from time to time with pamphlets containing instructions for the construction and maintenance of highways for distribution to persons doing business at their stations, and thus educate them how to build better roads, as well as teach them that better highways effect saving in transportation. Any railroad running through a territory having good roads must have a great advantage over a competing line with poor roads from its stations.

The executive officers of a railroad corporation can instruct Representatives in Congress on the importance of better highways, so that favorable legislation may be secured; newspapers to whom railroad companies extend their patronage might be requested to devote space to agitating this matter.

The building up of suburban districts, which is of such a profitable character to railroads, is first brought about by the construction of good roads by those who wish to sell land.

Aside from the material advantages that may accrue to a railroad by its aiding in the work of agitating this subject, there is to be considered the broader question of the great benefits that might be conferred upon the entire community.

Will you not aid this great movement which is of so much National importance?

There will be sent to you a memorial to Congress on the subject of roads, which contains the opinions of the following Presidents of railroads: Stayvesant Fish, Illinois Central Railroad; M. E. Ingalls, Cleveland, Cincinnati, Chicago, & St. Louis Railway; C. J. Ives, Burlington, Cedar Rapids, & Northern Railway; W. C. VanHorne, Canadian Pacific Railway, and many others.

Very truly yours,

ALBERT A. POPE.

SHEEP AND WOOL.

Shearings.

The value that a really good ram puts into a flock is astonishing.

Successful sheep raising requires close and prompt attention to small things.

In buying sheep for breeding it is pretty hard to tell whether you are buying the best blood or the best feeding of some careful breeder of sheep.

If you can't make a sheep pay that shears eight pounds of clean wool and weighs 175 pounds at two years old something is wrong or somebody don't know how to keep sheep.

It is a good time now, while mutton and lambs are high, for farmers to give the flock the proper attention to secure the best results. The old adage of "making hay while the sun shines" applies to lamb and mutton raising and feeding.

Encourage the children and lambs to romp and frisk over the yards and fields. It makes their lives worth living and develops the muscles. Never mind the noise and occasional inconvenience. They will get over it quite soon enough.

In this practical and pushing period no one can afford to fatten a sheep twice, unless it is a valuable breeding ewe. When by a mistake it is permitted to get very fat it should be sold to the butcher. Usually a very fat animal is spoiled for breeding purposes.

Don't conclude that you are entitled to the credit of being a good sheepman because you have bought some good sheep from somebody. It is all right to buy them, but unless you can keep them good and produce others from them as good or better you are a failure.

Iron-clad rules in sheep raising are impossible. What is all important with one is not so with another. Just why two men should obtain approximate results with entirely different processes may seem strange, but circumstances alter cases, and sheep raisers know this.

Would it not be well for sheepmen to write letters to the Honorable Secretary of Agriculture, a strong man in a strong place, stating what they think of the situation and what they want. He will listen to the complaints of sheep owners and do all he can to benefit them.

Is it incredible that a 40-pound lamb can be produced in 60 days; that a two-year-old wether should weigh 200 pounds; that a flock should average 10 pounds per fleece at 12 months' growth of wool? Go and see the man who took care of the flock. It don't matter so much about the breed of the sheep.

Every sheep farm should be an experimental station, where the closest observations are made of breeds, feeds, soil, climate, and seasons; cost of keeping sheep, cost of a pound of mutton and wool, the value of breeds for profit, the best age for breeding, feeding, and selling, and the closest study of conditions and health of sheep. If these things were carefully studied and a record kept of each, an intelligent system of keeping sheep would be the result. Other business men do so, and why should not sheepmen.

How much will a sheep eat? We don't know. Try the sheep for an answer; it is the best judge. Begin in a small way with good quality of grain, hay, bran, oil cake, roots, etc., and gradually increase the rations until they have what they will eat up clean, then you will know all about it. Remember, a man and a sheep will take and assimilate more food in cold weather than in warm. This extra quantity is required to keep up animal heat. Then, the question is: Which is the cheaper, heat-forming food or boards and shingled roofs. Take a pencil and figure it out.

As manure is one of the profits of keeping sheep, some forethought should be given to the subject. Almost any sort of trash may be used for bedding. The bedding should be liberally and regularly supplied. It should be renewed every day. One objection to using weeds and trash for bedding is the seeds of foul weeds and grasses that may be hauled out on the farm. No cheaper or more valuable material for this purpose can be found than forest leaves. If a supply of leaves can be gotten, no matter what sort of leaves, secure them while dry and store them conveniently under a good roof. Pine straw makes a good, healthy bedding, and a good fertilizer in Virginia. By the use of ample bedding the manure product of the flock may be increased many fold. A sheep may make a ton of manure a year.

We have practically 45,000,000 sheep in the United States. We grow about one-half of the wool that is required to clothe our people. There ought to be 100,000,000 of sheep, and why not? There is no more healthy country for sheep on the face of the earth; hence no better mutton and wool grown or can be produced anywhere. The American people are willing to do this and need the profits of the industry. American agriculture needs the fertility sheep can supply. Then why not do it? Who hinders? Shall it be written here: England and its allies, the free trade party, are a standing menace to the wool industry of the United States; threatening to down the profits, discouraging and destroying confidence in the investment of capital. "That's what's the matter," and the market statistics of the last 50 years prove it.

Going to Turn Over a New Leaf.

A great many farmers are ready to start out on advanced methods and are in doubt as to what needs to be done first. They hardly know whether to sell all the sheep they have and buy the best they can find, or to select the best they have as the basis of a new flock, and by the use of a pure-bred ram try to breed up to a profitable sheep.

This latter plan will be found to be altogether the most direct and practical. The sheep that have been raised on your farm are adapted to the situation, and will more readily respond to every effort made by you in the way of improvement. The sheep you may buy will be required to adapt themselves to new surroundings and the management you give them. In the first case it is an experiment; in the latter an assured success. Select carefully, then.

Choosing a Breed.

If this point has not already been settled with our readers it is high time that it should be. The general principle of sheep raising has given place to specific, intense, positive ways and purposes in this business.

The old-fashioned idea of a general purpose sheep for one and all purposes has not been found, nor is it known to any two men in the business. Plenty of men will insist that they have such a sheep, but no one can convince another that he has a general purpose sheep. The merino sheep fills the entire want of a wool-producing animal; it clothes the civilized people of the world; it is the sheep that furnishes the wool of the world for clothing the king on the throne and the best suits of the workingman and woman.

Its mutton qualities have not been so thoroughly developed as with what are known as the mutton breeds. The mutton breeds are not all of British origin, though often so considered by those who are interested in the breeding of those grand breeds. French merino sheep and some varieties of merinos found both in England, France, Germany, and the United States have mutton qualities of the highest type and as profitable sheep. These sheep have a wider adaptation to climate and conditions than any other sheep in the world, but are not likely to become the most popular breed for some of the special purposes required by farmers who find Spring lamb the most advantageous product of the flock. Farther along in the experience of sheep husbandry in this country the merino may be found as profitable as any for this purpose. The merino ewe, either in its highest purity or in its modified form, is the favorite with the best lamb raisers. It has special qualifications for this, and can hold its own with any breed on this side of the question.

The long-wooled breeds come in for special attention, and are represented by the Cotswold, Leicester, and Lincoln breeds. These are the largest domesticated breeds of sheep, and have each a most interesting and valuable place in connection with rich soils and high systems of farming. These are used more for mutton than wool, though giving valuable fleeces for certain manufactures that have been prized for hundreds of years by well-dressed people, particularly some lines of ladies' dress goods. The placing of these sheep should be a matter of careful consideration, or they rapidly degenerate into a nondescript, yielding neither the carcass or fleece which gives value to the animal. These breeds under proper situations and with judicious care are typical breeds where good farming is practiced.

The Short Wools or Downs.

These breeds, or more properly should be called varieties, have long been famous as adapted to "hill farming" in England. They are not so choice of locations as the long-wooled breeds, and more nearly resemble the merino types of sheep in adapting themselves to varied conditions of soil, climate, and pasturage. Of these the Southdown has the widest adaptation and is less liable to degenerate when well treated. It is the smallest of all the popular British breeds that is

dependent upon agriculture and kindly methods of management. The Oxford Downs are the largest of all the Downs, and, of course, belong to richer lands and better pastures than the Southdown, to whom it owes its origin and which it much resembles. The Hampshire Downs and Shropshire Downs are strictly a down or hill sheep with a Southdown origin, but as its habitat extended from the chalk range down on to the arable lands it took on character and size and rank as among the most useful breeds of sheep in English agriculture. These breeds, as can be seen by a comparison of their character and habitats where they originated, are readily adapted to the situation on the best farming lands in the United States. The Dorset horn sheep are quite like the merino, with horns, but are close akin to the Southdown, with which it divided honors for many years before it discovered qualities superior to at least with which the Southdown did not contend. This was in its unrivaled fecundity, which made it the most profitable breed for the purpose of lamb-mutton raising. All the Downs are noted for the mutton qualities. Southdown mutton is the standard of domestic or agricultural sheep meat. The other Downs closely rival each other in the best characteristics, but differ in maturity and feeding qualities and somewhat in size as we find them when raised in this country.

The Cheviot sheep is ranked in its own country as a hill or mountain sheep, and specimens we have seen would certainly indicate its usefulness were possible in the best mountain regions of this country or on any good soil.

Tone of the Wool Market.

Wool is in improved demand. There have been several reasons for the dull trade. The most important has been the keen pressure to sell wool to manufacturers who were already liberally supplied. This gave them the impression of a weak market, lessening confidence in the stability of prices. Notwithstanding that manufacturers are unusually well employed, they have been indifferent to the importunities of sellers. The uncertainty as to what might be the effect of cholera rumors was not without its influence for a time in keeping buyers out of the market. * * * The month of October opened with the tone of the market stronger. Prices are no longer in buyers' favor.

Commercial Facts About Wool.

The clip of the United States increased from 170,000,000 pounds in 1873 to 310,000,000 in 1891, an increase of 82 per cent. in 18 years under a protective tariff. The clip of the United States increased 100 per cent. up to the tariff reduction of 1884. The percentage of increase during that period exceeded that of any other nation in the world, being 100 per cent., as against 64 per cent. in free trade Australasia; as against 60 per cent. in free trade Cape of Good Hope; as against 35 per cent. in free trade Argentine Republic, and as against a decline of 19 per cent. in free trade Great Britain.—Justice, Batesman & Co.

SHEEP AT THE WORLD'S FAIR.

Official Information About the Showing of Sheep at the World's Columbian Exposition.

The following, from the rules governing the show of sheep at the World's Fair, will be of interest to sheep breeders:

Division C.—Sheep will be exhibited from Monday, Sept. 25, to Saturday, Oct. 14, 1893, inclusive. This will apply to the exhibits from the United States and Canada. Exhibits from foreign countries other than Canada, Division C will begin July 1, 1893. Ages of animals offered for entry must be computed to the following dates: Sheep, to Monday, Oct. 2, 1893. Rams three years old or over must have sired a live lamb within two years immediately preceding Sept. 25, 1893; that ewes three years old or over have produced a live lamb within two years immediately preceding Sept. 25, 1893.

By Rule 8 it is required that exhibitors must in each case fill an application showing that they have owned the animal offered for entry for a period of at least 60 days prior to the date of such application, giving the name, age, sex, and description of the animal, and must furnish, in accordance with the rules governing entries in the division to which the animal belongs, a copy of the certificate of registration issued by the association in whose registry such animal is registered, or evidence satisfactory to the Chief of the Department that the animal offered for entry is a representative of a recognized breed for which there is no established record.

Rule 9. In addition to the provisions of Rule 8, all applications for the entry of animals from foreign countries must have the official approval of the Commission or Commissioner appointed to represent such country at the Exposition. * * *

A copy of the certificate showing registration in one of the flock books named below, signed by the Secretary of the association publishing the same, must accompany each application for the entry of sheep of the following breeds:

Shropshire.—Flock Book of the American Shropshire Association, Shropshire Flock Book of Great Britain.

Southdown.—American Southdown Record, Flock Book of the Southdown Breeders' Association of Great Britain.

Oxford.—Flock Book of the American Oxford Down Sheep Association, Oxford Down Flock Book of Great Britain.

Hampshire.—American Hampshire Down Flock Book, Flock Book of the Hampshire Down Sheep Breeders' Association of Great Britain.

Cotswold.—American Cotswold Record.

Leicester.—Flock Book of the American Leicester Breeders' Association.

Lincoln.—Flock Book of the American Lincoln Breeders' Association. Flock Book of the Michigan Lincoln Breeders' Association.

Cheviot.—Flock Book of the Cheviot Society of America, Cheviot Flock Book of Great Britain.

Dorset Horn.—Flock Book of the Dorset Horn Society of America, Dorset Horn Flock Book of Great Britain, Canadian Dorset Horn Sheep Register.

American Merinos.—Flock Book of one of the following Associations: Vermont Merino Sheep Breeders' Association, Vermont Atwood Club Register, New York State American Merino Sheep Breeders' Association, Standard American Merino Register Association, Ohio Spanish Merino Sheep Breeders' Association, United States Merino Sheep Breeders' Registry Association, Michigan Merino Sheep Breeders' Association, National Merino Sheep Register Association, Wisconsin Sheep Breeders and Wool Growers' Association, Merino Sheep Register, Missouri Merino Sheep Breeders' Association.

Delaine Merinos.—Flock Book of one of the following Associations: National Delaine Merino Sheep Breeders' Association, Dickinson Merino Sheep Breeders' Association, Dickinson Merino Sheep Record Company, Improved Delaine Merino Sheep Breeders' Association, Black Top Spanish Merino Sheep Breeders' Association, National Improved Saxony Sheep Breeders' Association, Standard Delaine Spanish Merino Registry, Improved Black Top Spanish Merino Register.

French merinos.—American.

Rambouillet Record.—Rule 40. Applications for the entry of breeds other than those mentioned above must be accompanied by the information required by rules eight and nine.

Rule 41. Sheep offered for admission under an entry must be accompanied by a sworn statement giving date of shearing, which for sheep exhibited from the United States and Canada must not be earlier than April 1, 1893. Sheep that have been unevenly or stubble shorn, or that have been clipped so as to conceal defects, or whose fleeces have been artificially colored, singed, or oiled will not be admitted to the grounds.

Unimproved Sheep.—Rule 42. Entries may be made of specimens of unimproved types of sheep which in the opinion of the Chief of the Department of Live Stock possess historic or other interest to visitors. Sheep entered in this class will not be allowed to compete for premiums, but may be viewed and referred to in the official report of the jury of awards.

Sheep in South America.

Youatt and other writers support the natural conclusion that sheep in South America were of Spanish origin. In a report of the Argentine Republic accompanying their wool exhibit at the Paris Exposition in 1888 the official statement is made that wool growing was commenced in 1560. It is significant that no one has said those sheep were of Churra stock, as is of Mexico. The pastures of South America were of a coarse, wild nature, but gradually became soft and fine, and with this change the character of fleeces improved. Breeding to fineness of wool added greatly to this natural tendency to fineness, and the wools of South America are among the finest wools grown, and find a place in special manufactures in Germany more than in this country.

Get all the fresh air and sunshine into the sheep barns that you can. This will sweeten up things and promote good health.

The Angora Goat.

The Angora goat for some reason has not been as successful in this country as was expected 40 years ago. They were first introduced to the United States about the year 1845, and for a few years seemed to be popular throughout the whole country from Massachusetts to California. A Mr. A. Eutchedes, of Asia Minor, visited this country and placed a few very fine animals in the best of hands in Georgia, Kentucky, and California. By the death of this enterprising man, whose labors promised so much, the Angora goat, business suffered great loss. The most prominent American breeders, the late Robert W. Scott, of Kentucky, and Richard Peters, of Georgia, were enthusiastic and successful in disseminating pure-bred Angora stock. The largest owner and advocate of these useful animals in this country to-day is Mr. C. P. Bailey, of San Jose, California.



The accompanying cut represents a Geredeh Angora goat that was imported from Asia Minor by Chas. W. Jenks, of Boston, for Richard Peters, of Atlanta, Ga., in January, 1880. According to the Department of Agriculture, from whom we obtain the above cut, the goats from the district of Geredeh, in Asia Minor, are especially valuable. The report says: The Geredeh ram is a large and powerful animal, covered with a fleece that seems almost black, so surcharged is it with grease; but when scoured the mohair is found to be second to none in quality and fineness. It seems that very few of these superior animals have been secured, owing to the difficulties attending their purchase.

There are some reasons for the discouragement of goat raising in this country. Part of this is due to the impression that a cross of the pure-bred Angora ram on the common ewe goat was good enough for the purposes of mohair raising. And if good for this

purpose then good enough for breeding. This course rapidly degenerated the stock and many abandoned the business. Had there been pure-bred rams sufficient to supply the demand better results would have been obtained. The very high prices asked for the best rams was almost prohibitory, especially with small and ordinary breeders. The prices of mohair and the demand from American manufactures is quite sufficient to justify the expectation that the industry should become more general.

The reputation of the Angoras for hardness is all that could be desired. The ewes are prolific and the kids are easily raised after they are a few days old. There is a very general impression that goats are mischievous and inclined to trespass on forbidden fields, which is not true, provided fences are good. They are, like mules, easily taught to get over poor fences.

It is perfectly safe to conclude that no trouble is encountered in giving Angora goats a suitable habitat—one similar in character to which they are adapted in nearly all regions of this country. The habits of these animals are very interesting, and their wants are simple and easily supplied.

There is a need of more information and more intelligence in the breeding management and usefulness of these animals. The time will certainly come when the Angora goat industry shall receive proper attention and become a profitable industry. The misfortunes and mistakes that have befallen the business will in time be overcome.

Sheep Feeding on Ensilage.

Mr. John J. Rosa, of Delaware, has a flock of sheep that are pronounced good ones. He writes: "I have only a few sheep which I bought for an ensilage experiment entirely. These sheep have eaten nothing for two years except corn ensilage, and are now in good condition. Those that have not lambs are fit for the shambles. One cubic foot will feed five sheep one day, with the addition of two quarts of bran. The sheep are kept entirely in the stable and yard, and I yet fail to find any objection to the system. I shall gradually increase my flock under the same management. My ensilage costs me not more than \$1 a ton."

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THE APIARY.

Humming.

Colorado has such a dry climate and such bright sunshine that it has no fear of honey dew.

Even a poor season has its advantages, at least so says the optimist. A real failure of a season will help a close observer to discover his best bees and improve his stock by breeding from the best the following season.

Next to the North American, the Illinois State Beekeeper's Association is said to be the most important in the United States. It receives an annual appropriation of \$500 from the State Government, and does effective work for the interests of Illinois beekeepers.

The months of October and November are thought to be the best time for shipping comb honey, for then the markets are active. It should be in small sections, for then it is more likely to sell. It will not sell so readily when put up in 10 or 20-pound boxes, after the old style.

A beekeeper should perfectly understand the flora of his range, as well as how long the bees will have to live upon the stores in their hive. In preparing bees for winter one must have large colonies and a good supply of well-ripened stores. Unite the small colonies until they form large ones.

If honey is left in the hive until late in the season the bees will fill up the crevice and opening with propolis. The honey gets dark and begins to have a travel-stained appearance, which no amount of work can do away with. It should be removed from the hive when the harvest is over, and will ripen as well in a very warm room as if left in the hive.

It is said that Italian bees are rarely troubled with moth, and furthermore, that a moderately strong colony of these bees will soon clean moths out. If a colony becomes affected, the bees, together with the unfested combs, should be removed to another hive, and the old one well sulphured. Then if one or two of the moth-eaten combs at a time be given to a strong colony of bees after killing all the pupa which can be seen, the combs will soon be cleansed and used again. If the colonies are all kept strong in the first place, moths may be warded off.

Mrs. L. Harrison gives the following recipe for making feed: To 15 pounds of boiling water sift in 30 pounds of granulated sugar, stirring constantly. When it is all in and boils, remove from the fire and stir in five pounds of extracted honey. The honey is to keep the sirup from granulating. I have tried tartaric acid and vinegar for the same purpose, with very unsatisfactory results. A small wooden bowl makes a good feeder, as bees will not drown in it, placed in the upper story of a hive, where no bees can get in from the outside.

Separators.

EDITOR AMERICAN FARMER: A beginner inquires: "What are separators? Do I need them?" Separators, wood or

tin, are used on sections to cause the bees to build straight combs. There ought to be no occasion for using separators. They are certainly in the way, for there is such a thing as hindering a bee.

In the upper story of a hive is placed 56 one-pound boxes with a full sheet of foundation in each box. Now, if all these sheets of foundation hang straight and exactly in the center of each section, that is, if they hang exactly perpendicular, and if they do not fall down or become partly detached, there will be no need of separators, for the combs will be built to exactly fill the sections.

But it is seldom that these sections are so filled, because the conditions are not complied with. In one sense, the use of separators is chiefly to offset the carelessness and mistakes of the beekeeper. If the separators are used the bees must build straight combs; if they are not used, there may be confusion.

For example, suppose the sheet of foundation in a section falls down. Then the combs built in adjoining sections may be extended into this section, for it is a "bee law" that comb be built up to within a "bee's space" of anything on either side of it. In this case, then, are two malformed sections that are unsalable.

But—this is a great big "but" with a big B—don't—don't conduct an apiary to produce comb honey. Then separators will not be required. The first year of beekeeping is not usually a productive one, and it should not be expected to be, and during this year the novice may give his or her attention to comb honey. A beginner cannot be expected to do much, if anything, with extracted honey.

But the great product of the apiary, now or to be, is honey—honey out of the comb—now called extracted honey. Wax is indigestible and unfit for food. Moreover, the amount of extracted honey in an apiary may be two or three times that of comb honey, if the proper method be employed. Honey in glass jars—in white glass jars—is the only way in which honey should be sold, unless sold in bulk.—JULIA ALLYN.

To Introduce Queens.

In an exchange a writer says: "As quite a number have asked the best method of introducing queens, I will here say that I hardly know which way is best, but as I have been quite successful in the last five years, not losing a single queen that I remember, I will give my plans. The first is the 'candy plan'; but I do not like the directions that go out with the candy plan. I first know that my hive is queenless, then I lay the cage on the frames, wire downward, remove the tin from the candy end of the cage, and let them severely alone for one week, and I always find the queen out and laying. A great number of queens lost by introducing, I am satisfied, is because the hive is opened too early. Put in the queen, and do not, under any circumstances, touch it for a week, is my advice.

"Another good way is to keep the queen caged over hatching brood, and have no wire cloth on the cage. But as this is more trouble, we have not used it any this year. I would never make the colony queenless before putting in the new queen, as there is more danger in

your leaving some little, dumpy cell in the hive that will hatch before the queen is released, than there is in putting in the queen at the same operation the old one is removed. Then there is no danger of a queen hatching for 10 days, and by that time the introduced queen will be out. But usually the new queen is out and laying before the bees have time to start cells at all. Of course, when the colony has become queenless by accident, you should give them a queen the first chance, but be sure they have no virgin or queen cell, otherwise you will fail. Should I have one of those bad colonies to introduce a queen to, such as Mr. Doolittle speaks of, I would put the queen into the hive three days in the cage; I would take away all brood, and give them empty combs, or combs of honey. Then I would shake the bees all off the combs in front of the hive, and turn the queen loose with them, and as soon as they were all in I would shake them again, just as before, and then shut up the hive. In a few hours give them a frame of brood, and then let them alone."

Something You Have Heard Before.

Every bee paper sings the same tune and harps on the same string, and we are going to join in, even if it isn't original.

The tune is simply how honey should be put up to be marketed. One way of impressing the minds of men with facts is to present the facts in as pleasing a form as possible, and the next best way of making an impression is to be as wearing and persistent as you can. Don't mind how much they are irritated, but keep right on, for they are being impressed.

We use this latter method when we join in the old tune and say, "Put your honey up in neat packages. Half the profit is in neat packages. Show some knack and label your packages tastefully. Don't mix the grades and have streaked-looking honey." Our philosophy is perfectly applicable here, too; the minds of customers will be impressed if you do mix the grades, but you must reason out results. Many will think the streaks due to dirt and will not buy it. Honey can be divided into four classes.

"Fancy honey" is the pure article, made from the best blossoms. It should be fitted perfectly to the boxes and be without defects, whether dust, stains, or marred cells. "Choice No. 1 honey" should be of uniform color and the packages clean, and perhaps comb of uneven thickness, or some such slight defect.

Let "No. 2 grade" include all packages in any way soiled. This honey may be mixed, but should be of good quality.

It may also be partly sealed or partly unsealed.

"No. 3 grade" is the poorest, and is made up of scraps. Of course this will bring but little; but as a whole, prices will be better when honey is so graded. Altogether, it is an advantage to the seller, and cannot fail to give satisfaction to the buyer.

The Bees Go Free.

Some time ago, perhaps last Fall, we heard of a lawsuit brought against two men actively engaged in beekeeping. The plaintiff was unfortunate enough to have his residence between those of the two defendants. He claimed that the bees swarmed so thickly around his premises that they shut out the daylight, and kept his house in darkness. He wished to have them adjudged a nuisance, and asked that his neighbors be compelled to remove their hives; but the law decided that it could not, with justice, deprive these men of their only means of livelihood. The bees, therefore, continue in their own evil course, and rejoice that the law cannot touch them. Someone has said, in commenting on the case, that perhaps the bees stung the aforesaid defendant rather too near the eyes and so shut out the light of day for him, personally.

The Size of Beehives.

When the time of main storing begins many beekeepers want the brood frames contracted to a smaller space. They think that if the bees have a large space they will store there the nice white honey which should go into the surplus apartment.

Dr. Miller, to whom the foregoing theory seems reasonable, says: "I practiced contraction to a radical extent, reducing the brood chamber from 10 Langstroth frames down to eight, six, five, and less. I am obliged to say that I could not tell for certain whether I gained anything by such contraction. I think I got just as large crops with 10 frames in the brood chamber; but then there are so many things to be considered, the different seasons among others, that it is hard to be certain. Try it yourself. By means of a division board you can contract down to any number of frames you choose, and use the same supers above. At present I use eight frames all the year around, but I do not know whether it is best."

At a negro wedding, when the minister read the words "love, honor, and obey," the groom interrupted him and said, "Read dat again, sah; read it wunce mo,' so's de lady kin ketch de full solemnity ob de meanin'." I've been married befo'!"



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WINTERING BEES.

Importance of Uniting Weak Colonies, and How to Care for Them.

EDITOR AMERICAN FARMER: The beekeepers' year begins or ought to begin in September or October, after the first frost. But if the first frost, as is the case in some parts of the country, in middle latitude, does not come till November, then the year must begin earlier, unless the Winter, like the first frost, is deferred.

In a great degree the beekeepers' work in the Fall determines the success in the following Spring. Now, the first thing to be done in preparing a colony for Winter (and for the coming Spring) is to find out its strength. If it be a weak colony, it must be made strong before it begins its Winter life. If Fall preparation be begun early enough, the colony may be brought up to the required strength, but this is not the usual way; that is, it is not begun till the Fall work is done, and then it is too late. There is usually enough to do in an apiary at the close of the season without stopping to coax a weak colony into more life.

The quick and economical way to make colonies strong is to unite them. If in an apiary of 50 colonies there be 25 weak ones, let the weaker be added to the stronger without delay, and then if they are not as strong as they ought to be, reduce the number of colonies—double up again. There is nothing so worthless as a weak colony in the Fall. The practical beekeeper knows that it is unprofitable at this season of the year "to fuss" with a weak colony by itself—as useless as it is to doctor a sick hen—time in either case thrown away. Half if not more of the failures in beekeeping come from the persistent puttering with weak colonies—working over a handful of bees.

It is true that in reducing an apiary of 50 colonies to 25, or 12, there will be a great slaughter of queens, and it is true that it might be of advantage to have extra queens in the Spring; but there is more profit in destroying the queens, cruel as it may appear, than in trying to keep them and their weak colonies through the Winter. As before stated, even if the weak colonies are coaxed to live through the Winter or to make the attempt, they may not succeed.

To unite colonies is a simple matter. Select the best queen, or the colony having the best queen, destroy the other queen, sprinkle, wet down, drench the two colonies with water in which a little extract—any cooking extract—has been poured, smoke them, also, and then pour the bees, shaking them into the hive. If frames of brood or honey are to be transferred, let the frames of the two colonies be placed alternately in the hive.

When the colonies are united and reduced, so that only strong colonies remain, then begin to prepare them for Winter or the following Spring. Feed them a pound of honey or sugar sirup dissolved in hot water every day in the middle of the day. Give the sirup warm but not hot. The best way to feed sirup is to place a baking tin in the upper story and fill with sirup. On the surface of the sirup put sticks for the bees to use as climbers. Bees in feeding from a full dish are like the buffaloes

that come to a precipice; those on the edge would not go over if those behind did not push them over. It is so with the bees crowding around the edge of the full dish—in they go, and those next in the rear follow suit until a great many are drowned.

The odor of the sirup attracts the whole colony, and it throngs to it and into it if there be not climbers on which to crawl out. The sticks on the surface are like so many little rafts in the sea of sugar, from the edge of which the bees sip the sirup, and as the rafts fall with the tide, as the honey or sirup is withdrawn, no lives are lost. Prepared in this way the bees with their honey sacks full go out of the dish over the backs of their comrades.

If the bees have not sufficient stores for Winter there is a twofold object in feeding—to provide food for the Winter and to stimulate the queen. But whether the colony have food or not for Winter, it should be fed to prepare it for duty the next Spring. The writer has written what follows many times, but as it is important it may bear repetition.

If a colony goes into Winter quarters with old bees, a large number will die of old age before Spring. If the honey harvest close early in the Fall—if there should be a hard frost in September—the queen stops laying, and the bees that go into Winter quarters will be old bees before Winter begins, for the life of the bee—perhaps equal to three score and ten to a bee—is only five or six weeks in the hot months.

Therefore, to have a strong colony early in the Spring, it is necessary to have young bees that have done no work in the Fall before; that have not worn their wings into rags and enervated their bodies by working on the previous crop, and the accession of young bees for the next Spring's work is obtained by feeding in the Fall.

As long as honey or sirup is given to the bees the queen will lay, provided the feeding is not continued into cold weather. As the queen's eggs requires 21 days of incubation, the beekeeper must stop feeding within 21 days before cold weather comes. This may not be determined accurately, but the feeding must stop early enough to escape chilly weather.

The colony fed in this way becomes strong in young bees. They pass the Winter more comfortably because the hive is full of bees and the brood nest is warmer; the queen begins to lay earlier in the Spring because the force of bees or brooders is large and may cover many eggs and attend to the wants of the larvae, and when Spring comes there is a large force of bees to gather the honey in the fields.

Usually, if not always, success in beekeeping depends upon the work done before the first of June, and the way to accomplish something by or before that time is to begin in the Fall.

After feeding is concluded, place a burlap mat, or a mat that will absorb moisture, over the frames, but under the mat across the tops of the frames, place strips of wood two inches wide. This allows the bees to go from one frame to another over the tops of the frames and under the mat. In a long cold snap the bees may be obliged to go to another

frame outside of the brood nest for food, and if they must go around the bottom of the frames or combs, they may be chilled and never reach their destination. Over the mat fill the upper chamber with chaff, sawdust, or leaves, even newspapers or clean rags.

Be sure that the colony has food enough—25 pounds of honey or sugar sirup—and be sure that the colony is strong in numbers, and do not disturb till Spring.—JULIA ALLYN.

Markings of Bee Exhibits.

S. T. Chambers, the Secretary of the Beekeepers' Association to all agricultural societies in Australia, sends the following circular for the guidance of exhibitors at fairs, as requisite for successful exhibition. The circular we find printed in the *Farm and Home* of Melbourne, and the markings will undoubtedly prove of interest to our readers:

Honey.—In quantities of not less than 14 pounds in glass—as representing an amount gathered during the present year (if Autumn shows), or in the previous year (if Spring shows), of 150 pounds—declaration to that effect required.

Honey in Comb.—Quantity of exhibit, 12 pounds in sections, to represent a bulk taken (as above) of 75 pounds.

Exhibit of Apiarian Appliances.—Largest collection, the *bona fide* property of exhibitor.

Bees on Comb Under Glass.—Best exhibit of any sort.

We further beg to advise the following points in judging:

Honey—	
Flavor.....	50 points.
Color.....	20 "
Clearness.....	20 "
Neatness of exhibit.....	10 "
	100 "

Honey in Comb—	
Flavor of honey.....	50 points.
Fullness and finish of boxes.....	25 "
Whiteness of comb.....	15 "
Neatness of exhibit.....	10 "
	100 "

Exhibit of Appliances.—Should include hives, honey extractor, and all necessary implements. Greatest variety, utility, and best finish to claim prizes.

Bees on Comb.—Queen, workers, and drones to be shown on comb of brood. In judging Ligurian stock local appointments had better be made, exhibitors nominating their judges. Failing this, expert judgment to be secured at the nearest point. Judgment by points:

Color and marking of workers.....	50 points.
Color, shape, and general appearance of queen.....	25 "
Neatness of exhibit.....	15 "
	100 "

Scarcity of Good Honey.

If honey is of good quality, it ought to bring a good price this Fall. Those who have plenty to sell are "twice blessed," because it is scarce and because of its high price. A merchant in a letter to the *Bee Journal* says that he cannot get enough honey to supply his trade, though heretofore he has always been able to fill every order, and could show his friends at any time 100 to 500 barrels. Now he cannot show 30, and receives numerous orders which he cannot fill. The market is by no means overstocked.

The Scotch Plan.

A Scotch father explained his principle of getting his girls off to an old friend whose daughters became rather old stock. He said: "I don't let him make many calls before I give him to understand he isn't wanted. I tell the girls, too, that they shall not have anything to do with him. The plan works. The young folks begin to pity each other, and the next thing I know they are engaged to be married. When I see that they are determined to marry, I always give in, and pretend to make the best of it. That's the way I manage it."

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THE GARDEN.

Pluckings.

Sow spinach seed in rows one foot apart.

Mow asparagus beds and remove the top before the seed is scattered.

Potato scab can ruin the value of the crop. If your potatoes are affected, do not save any of them for seed, and do not replant on the same soil next year.

The present is as good a time as any to plow up weeds. Let their roots be exposed to winds and frosts, and it will do a good deal toward their extermination.

Dig potatoes in dry weather, and let them be dry when stored. They should not be sun dried, but air dried. The sun injures their quality as well as their color.

If you intend to grow early vegetables under glass you should make preparations in the Fall. The hot-bed planks ought to be set and secured by stakes before the ground freezes.

Gardens infested with cut worms should be burnt over in the Fall; if the land can only be cleared of them in the Fall there are few chances that they will reappear in the Spring.

The rotting of greenhouse lettuce is caused by a fungus, and the best remedy is to remove and burn the affected plants, and thoroughly clean the wood work. Whitewash will do the latter. It is best to change the soil also.

The vegetables most rarely seen in the garden are asparagus and celery, and yet none are more profitable. They help, too, to lengthen out the season, for one is the first to come in the Spring and the other the last in the Autumn.

Clarence Latham, Groton, Conn., has picked from his cranberry bog this year 375 bushels. The cost for gathering was 50 cents a bushel, and the price he received was \$2.50 a bushel, which makes his cranberry product worth to him this year just \$750.

Beets are more liable to be damaged by frost than carrots or turnips. One way to preserve them is to form a pile and cover with a light layer of soil, which should be increased in thickness as the weather grows colder. Other roots may be kept in the same way.

Celery culture is easier than some people think. It is not absolutely necessary to set the plants in a trench. Let the soil be rich, start them on a level and then bank up as needed. Do not, however, bank much soil around them until the weather gets cold. It will, perhaps, cause rust.

The *London Garden* speaks in praise of all American potatoes. It says that of all varieties introduced in England, none have found such favor as the "pretty pink-skinned Beauty of Hebron." The Early Rose was once the most popular, and is still widely grown there. The White Duke of Albany is another variety. It is like the Beauty of Hebron, except for its white skin.

Vick tells in his illustrated monthly that there is probably no better way to keep onions than the one usually adopted of storing them in a barn. A layer of hay is spread on the barn floor



AFTER HARVEST

When the golden grain has been shocked and put away, and you see the good results of a hard but prosperous season's work, your thoughts are most likely turned towards the purchase of a new Buggy and Harness, and you say to yourself, what make shall I buy? The answer comes to you quickly—THE CELEBRATED

MURRAY \$55.95 BUGGY & \$5.95 HARNESS of course. They are

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of sufficient thickness to guard against frost from the cracks below—a layer a foot thick when pressed down would be a safe one. The onions are spread out over the hay and then covered with a thick layer of hay or straw. When the onions are pulled, which should be in a dry time, they should be allowed to lie on the ground two or three days to partially dry off. They can be spread out in any dry, cool place until severe weather makes it necessary to put them into Winter quarters for protection.

Blight and Root Gall on the Winter Tomato.

The tomato cultivated under glass is rapidly becoming an important Winter vegetable. Like most forced plants, however, it has its enemies in the way of insects and diseases. Two of the latter are Winter blight and root gall. A bulletin, explanatory of these diseases, has been issued by the Cornell Station, showing the result of investigations made at that station.

Winter blight first attacks the leaves. They fade slightly and seem dwarfed. Then yellowish spots and splashes appear, which in time turn almost black. At last the leaf stiffens and its edges curl downward, while the stems get small and hard. It was finally decided that spraying was unsuccessful. Complete renovation is strongly recommended as a remedy, such as promptly removing all diseased plants, renewing the soil and starting over again.

The common blight often in late Winter or early Spring takes the form of cinnamon-brown spots on the under surface of the leaves. The old plants have to be burnt as soon as the fruit is off of them. If it comes early, spraying with ammoniacal carbonate of copper is recommended.

The formation of root gall is caused by *Nematodes*, or minute worms. They take to the plants growing under glass, and require severe treatment. Both soil and plants have to be removed, and all boxes and woodwork washed with lye.

A Word for the Humble Potato.

The potato is compelled to stand more abuse during the process of harvesting than any other crop that we grow. The boys and the hired man, and sometimes

the master, also, seem to think that it does the tubers a great deal of good to be thrown and banged about and to be emptied as forcibly as possible from one receptacle into another. This, however, is a mistaken idea. Such treatment results in bruises, and bruises induce rot. The farmer who understands his business has the potatoes picked as soon after digging as they are dry enough; then placed carefully (not thrown) into boxes, basket or barrels, which, when filled, are lifted into the wagon. They are not emptied into the wagon and then shoved out again, but these packages are hauled to the cellar or storeroom, lifted out with some degree of care, and then emptied where the potatoes are to finally remain. It is possible that not quite such large loads can be hauled in this manner, but the work will be performed more expeditiously than if the potatoes are carried in bulk and then shoveled out. If boxes of uniform size, say each holding one bushel, are used, they can be handled easily and placed in the wagon so that as large a load as desired can be made.

Sweet Potatoes.

Let sweet potatoes dry well in the field, after digging, which should be done on a sunny day. Handle them carefully, and throw out the poor ones. Do not allow them to become chilled. Pack them in barrels between layers of dry sand and store away in a dry, sunny cellar. Charcoal dust, wheat chaff, and other substances may be used instead of the sand, and a warm attic is as good as a cellar to keep them in. There should be entire freedom from moisture, and enough covering to prevent heating.

Electro-Plant Growing.

There has been a good deal of talk about electro-horticulture. Interest in it was aroused in 1890 by the experiments made at the Cornell Station to test the effect of electric light on plants in glass houses. Plants were exposed through the night to the rays of an ordinary arc light, and these plants compared with others which had no light at night. Some satisfactory results were obtained, but they were not altogether so.

Other experiments have since been made, and numerous facts have been developed. It is found that the light

shining through a glass roof may be beneficial to plants which are injured by the bare light. The electric light causes the plants to mature earlier; an average of five hours per night will put them ahead from one week to 10 days. The tendency of the leaf plants was to run to seed, instead of developing edible leaves.

If a proper distance from the light, lettuce and radishes were benefited. There was also some improvement in beets and spinach.

It is thought that the electric light will be of great advantage in growing some plants.

How to Keep Grapes.

Grapes should be gathered on a clear day, and the imperfect ones clipped from the bunches by a pair of sharp scissors. Some varieties may be kept long into the Winter. They need cold and a dry temperature. They should be packed in layers with dry paper between them, and have a lid nailed tightly on them. The main point in keeping them is that they should be free from moisture and kept cold without being allowed to freeze.

Why It Was So

During a Sunday school service the minister was explaining the need of joining a church in order to obtain all the blessings of a religious life.

"Supposing," he said, "that my house was filled with water pipes and faucets, and yet I had no water in the house. What should you say was the matter?" He expected the children to see that a connection with the water main would be necessary before the water would flow into the house, but only one little boy held his hand up.

"Well," said the minister, "what is the reason there is no water in my house?"

"I guess it's 'cause you don't pay up," replied the child.

"Don't Tobacco Spit Your Life Away"

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THE ORCHARD.

Cullings.

The olive is being widely cultivated in California.

Orange culture is securing a foothold in Arizona, particularly in the Salt River Valley. Considerable orange planting has also taken place in Louisiana.

Every effort is being made in the champagne districts of France to arrest the progress of the phylloxera which infests the vines. The diseased vines are uprooted and burned and replaced by American stock.

If the best kinds of fruit trees are planted on the farm the land becomes very valuable almost before the owner knows it. The old Scotchman probably thought of this when he said to his son: "A tree, Sandy, is always growing while ye are sleeping."

A peach grower who has had some experience advises that while peach trees are young a too rapid growth should not be forced, as it tends to produce early decay. Also, no fertilizer should be applied to young orchards growing in good soil until bearing time.

The Hatch Experiment Station has decided that solutions of copper, properly applied, will mostly, if not wholly, prevent apple scab, pear blight, and cracking of the fruit; peach and plum fruit rot, plum leaf blight, and plum black wart; grape powdery, mildew, black rot, and raspberry anthracnose.

California fruit packers know how to pack fruit, and this is why there is such a demand for the fruit put up by them. Eastern fruit has the advantage of a superior flavor, but does not begin to secure the same price as that from California. It is not carefully sorted and packed, and Eastern growers do not seem to recognize the importance of having it so. In this line of work they have a good deal to learn, and the sooner they learn it the better.

If sawdust is found about trees, borers are evidently at work on them. They eat awhile beneath the bark and then come out from small round holes usually some inches above the place where the egg was laid. If their number is sufficient they will weaken the tree by devouring the wood and bark, so that it is liable to be blown over by strong winds. They should not be allowed to find a home in the trees. When they are small they may be destroyed with the point of a knife, or they can be cut out or punctured with a flexible wire.

Statistics relative to our apple exports are given by the *California Fruit Grower*. The amount of dried apples exported during the past year was 6,973,168 pounds. Nearly half of these were sent to France and the rest to Germany, the Netherlands, Great Britain and Ireland, Belgium, the East and West Indies, the Cape Colonies in Africa, Central America, Brazil, Chile, Sweden, Norway, and Denmark, the Azores, Madeira, the Cape Verde Islands, and Mexico. The value of all these goods was \$409,605. The number of barrels of apples sent off in their fresh state during the same time was 1,042,530.

The following item shows what the thrift of one woman can do. "At Sparta, Wis., a woman raised last year nearly 200 bushels of strawberries on an acre and a half of ground, and 1,300 bushels of blackberries on six acres. The total income from the crops was \$4,378." Fifteen hundred currant bushes can be planted on one acre, and if well cultivated, each plant should produce four quarts of fruit. The usual price for which they will sell in market is from 10 to 15 cents per quart. According to the *Rural New Yorker* there has been a steadily increasing demand for this fruit, and they are a most profitable crop.

Planting Orchard Trees.

In a paper read by Mr. J. B. Mitchell before the Northern Iowa Horticultural Society, he said:

There has been much written and said as to the site for an orchard, and I will only repeat that a northern or north-west slope, open to the north and west, is best. The ground should be deeply plowed in the Fall. The holes should be dug deep and broad enough to receive the roots in their natural position. Plant about two inches deeper than they stood in the nursery for small trees, and still deeper for larger ones. Have the holes as broad at the bottom as at the top, with a mound of loose soil at the bottom. Wet the roots of the trees and place them on the mound, and fill up and around the roots with moist soil, packing tight; keep filling in until the roots are well covered, and tramp it hard around the outside.

Set the trees as solid as you can; you cannot get the earth too tightly packed about the roots. Fill up the hole with earth, but put on no water. If the soil is moist enough for corn, and the roots wet when put into the ground, and the soil well pressed down, they will keep damp enough, and be in much better condition than if set in mud, which will harden, crack, and settle away from the roots and admit the air. Soil worked when wet is in no condition to furnish plant food. To water trees after they have been planted by pouring water on the naked ground I believe to be bad practice. If planted as described it is unnecessary. The tree might receive benefit from wetting the trunk and body after sundown. We cannot improve upon nature's way of watering the tree. A loose soil is both mulch and moisture to a newly-planted tree. Keep stock out of the young orchard, for if the tops of the trees are browsed off in the Fall or Winter, the trunk will be so diseased it will never recover.

Is it Curculio Proof?

Prof. Bailey thinks there are no curculio proof plums; but a writer in *Orchard and Garden* says that the Moor's Arctic plum which he has been growing, has never been marked by the curculio. He has a row of 36 trees, and will try the plan of bending and covering the fan-pruned ones for Winter protection. This kind of plum is rather small and of medium quality, but for all that, if it is curculio proof, it will be as greatly appreciated by growers as if it were the little golden apple tree in the fairy tale.

Different Ways of Harvesting Apples

At a Grange meeting at Hopkinton, N. H., the subject of handling the apple crop was brought up for discussion:

Geo. Putnam, of Hopkinton, said that as soon as the apples sweat in the pile the sorting should commence. He used paper at the head and faced the first layer; would make apples alike all through the barrel. Last year prices were so low that he tried the Boston market and concluded to ship his apples, which he did with satisfactory returns. Apples should be sweat once before being sorted, but if too deep in the pile they would be discolored; 18 inches deep would be all right.

Bro. Bachelder, of Northfield, said he once worked for a man who laid his apples on shelves two or three feet wide and let them lie two or three weeks before sorting. He then sorted well, put a card in each end with his name and variety and quality of the fruit. He had bought and fed large quantities of cider apples when cheap, one year having nearly 2,000 bushels for his hogs and cows.

Bro. Shepard, of West Concord, said he had taken care of an orchard for the last eight years and it had increased from 25 to 350 bushels. He instructed his help to drop all the poor apples on the ground. He used long ladders with brads in the bottom so that one man could raise them. The average cost of picking and sorting for the last four years had been 31.1 cents a barrel. The lowest was 27.5 cents, and the highest 40.4 cents. He had rather have young pickers on the whole. He lost money last year by making too big sweating piles.

Preserved Fruit Among the Ancients.

The following is from the *St. Louis Republic*. It might be well to add a grain of salt to the fruit that remained fresh for 19 centuries: "Do you know that we are indebted to the old Pompeians, who lived in the first century, for knowledge of how to can fruit? Perhaps not, but it is a fact, nevertheless. Years ago, when excavations were first being made on the site of the old lava-covered city, a party from America found a jar of figs, not only one, but several. Upon opening one of them the contents were found to be as fresh and perfect as when put into the jar 19 centuries before. Investigation instituted on the spot proved that the fruit had been put into the jars in a highly heated state, and that an aperture for the escape of steam had been left in the lid, which, when it had served its purpose, was sealed over with wax. Yankee ingenuity caught the idea at once, and the next year canning factories were erected all over the United States."

Fertilizers for Orchards.

Leaves well rotted and spread over the orchard, together with wood ashes, will make almost a perfect fertilizer. Both contain some of the elements of the tree, and when applied in this way the tree can appropriate them again.

Always save the leaves and cover lightly with dirt, no matter how big the pile gets. It will furnish a constant supply for the orchard.

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Skimmings.

Jerseys are more affected by tuberculosis than any other breed.

If 50 pounds of silage is fed per day to each cow there is no need to feed along with it over five pounds of hay.

If you suspect an animal of having tuberculosis do not sell her milk or use it, since it is liable to sow the seeds of consumption.

A dairyman of some repute says that he finds beets far inferior to silage as feed, and for the butter maker the silage will give the butter a pleasing flavor that cannot be secured from beets.

If a cow had a cough it is well to examine her and see if she has tuberculosis. Lumps under the jaw, emaciation, dimness of the eyes, and other like signs are evidences of the presence of the disease.

In reply to a question as to how many cubic feet of air space each animal should have in the stable, Prof. Roberts replied: "In England the rule is four cubic feet of air space for each 100 pounds of animal. Here fully as much more is needed."

Beets are valuable to feed where hay forms the principal ration for cows. They not only act as a promoter to health, but also tend to counteract the heating properties of the dry grains and hay and assist in the work of digestion. This is certainly a good enough claim for the beets.

CHEESE MAKING.

The Manner of Making this Article as Taught by an Instructor.

In one of our recent issues we had a very able article on the manufacture of cheese in the home dairy by Mr. Henry Talcott. We now give the manner of making this article as given by Mr. George A. Smith, the chief instructor of the New York Dairy Commission. He says:

The object of ripening the milk before adding the rennet is to have a sufficient amount of acidity developed so that the curd will work along in good time, and make a good solid-cutting, well-flavored cheese. The general principle underlying the manufacture of cheese depends primarily upon the action of the rennet in coagulating the casein of the milk and in that way holding a larger portion of the fat. The sugar and albumen of the milk are thus chiefly carried off in this way. The rennet is principally obtained from the mucous surface of the fourth stomach of a suckling calf. It is preserved for use by carefully cleansing without washing it, and it is then rubbed with salt and dried. When wanted for use it is soaked in weak brine, and the liquid thus obtained is nearly always used to coagulate the milk.

When the milk is found to be in proper condition, sufficient of rennet solution is stirred in to cause it to begin to thicken in 15 to 18 minutes. It is then allowed to stand until the curd is firm enough so that by laying the back of the fingers and hand on it next to the

side of the vat and gently bearing it away it will cleave off. For cutting, the curd knives containing several blades, about half an inch apart, are used. When cut the curd is left in small cubes, each not more than half an inch in diameter. It is necessary to use every care that the pieces of curd may be even in size, so that the heat and rennet will act together and on all alike, producing an even curd, without which it is impossible to make fine cheese.

The main loss of fat takes place in the process of cutting and handling immediately following. The globules of fat on the exposed surfaces are easily detached, hence the necessity of carefully handling not to mangle and bruise the curd, and thus increase the amount of fat lost. As soon as the curd is completely cut, it is stirred very gently for 10 or 15 minutes, until the outside of the pieces shows the appearance of a slight film, and the whey commences to separate freely from the curd. The latter is then gradually heated to a temperature of about 98° F. During the process it is always kept in constant but gentle agitation.

The heating stimulates the action of the rennet, which shrinks the casein and expels the moisture from the kernels of curd. It is very important at this time that just the right amount of moisture should be separated from the curd. If too much is driven out there will be a loss in yield and a coarse, hard textured cheese. On the other hand, too much moisture makes a cheese that cures too fast and which will get off flavor quickly, for the reason that the retention of so much moisture causes the conditions that are the most favorable to the development of the bacteria of putrefaction.

When the curd has become sufficiently firm and dry it is allowed to settle on the bottom of the vat and stand until there is the needed development of acid. To tell exactly when it is the proper time to draw the whey from the curd requires the best judgment of the maker, as it is one of the critical points in the manufacturing process. The common test to determine the time to draw off the whey is known as the hot iron test.

A portion of the curd is squeezed in the hand until partially dry, then placed against hot iron and carefully drawn away. If the curd sticks to the iron and is drawn out in fine threads about one-fourth of an inch long, the whey is generally ready to be drawn; if the threads are shorter it is allowed to stand until a satisfactory test is obtained. This test is supposed to indicate the amount of lactic acid present. After the whey is drawn from the curd, the process of manufacture may be varied, one method of treatment making what is known as stirred curd cheese, the other method a Cheddar cheese. In the stirred curd process the acid development is carried farther in the whey before it is drawn off, and afterward the curd is kept stirred and the kernels kept apart until salted and put to press.

In the Cheddar process, after the whey has been drained from the curd the latter is packed on the sides of the vat, leaving a space in the center for the whey to drain off. After a little time the curd is cut up in pieces convenient to handle and turned over from time to

AN EFFICIENT CORN-SHELLER FOR EVERY-DAY USE.



Many people would prefer to shell all their own feed-corn as they use it, if they had an easy sheller which would do the work quickly. The illustration shows the most scientific, yet simplest in construction, of any corn-sheller on the market.

The improvements of this machine over others are: First, that it instantly adjust itself to any size ear, removes all the kernels from the cob, at the same time throwing the cobs on the floor away from the corn. Second, from the peculiar construction of the teeth on the disc some draw the ears into place without assistance from the operator, while others are arranged to strip the

kernels from the cob at the same revolution. Third, because of its simplicity it is always in working order.

This is without doubt the cheapest, as it is the best, machine of the kind on the market.

Any farmer or poultry raiser who has corn to shell will save the cost of this sheller in a few days.

This is sold for \$2.25, or with THE AMERICAN FARMER for one year it is sent for \$3.

time to allow the whey to drain off more perfectly. When the curd becomes pretty well freed from whey, the pieces are doubled and the process of doubling is continued at short intervals until the whole forms a compact pile. It is held there until the curd begins to feel mellow and has a stringy, fibrous texture, when it is put through the curd mill to tear it in pieces, so that it can be salted, after which it is put to press.

With good milk, fine cheese can be made by either plan, but taking into account all the changing conditions the cheese maker must meet, I have no doubt the Cheddar plan is the safer. The average amount of milk required to make a pound of cheese is a little over 10 pounds. The best apparatus for a small dairy is a small self-heating vat—that is, a fire underneath the vat surrounded with water and connected with the water surrounding the vat. For the factory a boiler and steam pipes connected with the vat are sometimes used.

Meadows and Pastures.

Where meadows and pastures, have been damaged by the recent drouth it should be the especial work of farmers to repair the losses at once by reseeding not only the worst places, but the whole area of land devoted to grass.

With timothy meadows we would recommend the sowing of six or eight quarts of seed if the damages are moderate, and more if the plants have been badly killed. Had this been done soon after haying the young plants would have come along nicely and yielded a full crop of hay next year, and may yet. If the meadow was timothy and clover it would hardly be advisable in the North to sow clover seed now, though farther South it would do well. Red top and the hardier grasses may be sown now.

It is probable that the pastures have been seriously injured by drouth and hard stocking this Summer. Unless

these are promptly repaired they cannot be expected to furnish their usual amount of pasturage next year. Even blue grass can be killed by overstocking of a very dry year. A free use of the harrow now and a liberal reseeding with mixed grasses should be resorted to at once. Timothy cannot be recommended as a pasture grass only on account of its liability to be killed by close stocking. Yet no grass will give more and better grass if well treated. It would be well to make timothy a small part of the mixture. Red top, orchard grass, white clover, blue grass, Swedish clover, Japan clover, and English blue grass will be found reliable for a pasture. The character of the land and the climatic conditions will receive some consideration in selecting varieties, as with all experiments agriculturally.

It has been a practice with the writer to reseed the lands devoted to grass every year, and the results have been so satisfactory that there is no hesitation about recommending the matter to farmers. It is to top dressing and reseeding that good crops of hay and rich pastures have been satisfactory with us for the last 10 years.

NEW PUBLICATIONS.

TOMATO CULTURE. By A. I. Root, J. W. Day, and D. Cummins. Published by A. I. Root, Medina, O. Price 25 cents.

This little book will be found valuable to growers. It is divided into three parts. The first, Tomato Culture in the South, by J. W. Cummins; part second is Tomato Culture for Canning Factories, by D. Cummins, and part third, Plant Growing for Market and High Pressure Gardening, by A. I. Root. The pretty illustrations are an attractive feature of this book.

PHANTOM DAYS. By George L. Welch. Published by J. S. Ogilvie, 57 Rose street, New York. Price 50 cents.

This is a charming romance, well written, vivacious in plot, with strongly distinct characters, and well-sustained interest throughout.

About the hardest crop to raise on a farm nowadays is the boys in the family.



November in the Poultry Yard.

Cabbage should now be stored for use in Winter. A cool cellar is the best place to store it. During the Winter hens will delight in picking the leaves from a head of cabbage hung up once or twice a week in their laying house. The properties of the cabbage leaf in its natural state seems to be very beneficial to the health of the flock, and even when boiled and mixed up with other vegetables they will eat it with much relish.

The house should be carefully examined now. If vermin are discovered, and it is a sure thing that they will, they can with the aid of some whitewash and kerosene and cold weather be exterminated. Summer weather may be favorable to their multiplication, but the cold of Winter is death to them. They hug the body of the fowls more closely, and if the dust bath is provided, in addition to the remedies mentioned above, it will prove fatal to the lice. Even if you fail to discover vermin, you may be reasonably sure that they exist. Since an ounce of prevention is worth a pound of cure, take time by the forelock and go over the perches and crevices first with kerosene, and then do the whitewashing after.

See that the house is tight; that is, that there are no cracks in it. This is the most trying time of the year, and the mortality among so many farmers' flocks is due to unheeding this simple precaution. All poultry raisers, I am sure, know that it is tempting disease and death to force the fowls to roost in a draft. They know this and yet they do not pay any attention to it. If you have not the boards or slats necessary to cover these cracks at hand, I can suggest a happy remedy which is so simple, easy to do, and so cheaply performed that there is no reason in the world why the cracks should be opened. The way is this: Whitewash a section of the house; then take an old newspaper and paste over the place in the same manner in which a room is papered or a bill-poster sticks up lithographs. Cover the whole interior of the house in this way, and then take the brush and go over the paper again. If you do not think one thickness of paper is sufficient, put as many on as you like. This is killing two birds with one stone. You are destroying the vermin and closing the cracks.

Try this!

The drinking water should be attended to. This may seem queer, but it needs looking after. If any of our farmer

readers living North have fowls possessing long combs and wattles, they should be careful. In drinking they are apt to get these appendages wet, and if the weather is cold, the result will be that these will freeze. To overcome this have the drinking fountain so fixed that there is only a small place at which the fowls can drink. Some prominent poultrymen only supply water to their stock three times a day; at each time the water is not cold but near lukewarm. The ordinary dunghill, with a small comb, does not run these chances.

By this time almost all green things have disappeared, and thus one source of nitrogen is cut off. Since this is an important element in the production of an egg, it behooves the owner to supply this material in order to have a flock of Winter-laying hens. In the ordinary farmyard the hens who scratch in the manure pile get some animal life which partially supplies the demand.

Where the fowls are confined something else must be done. There are two

ways of doing this, and it is best to follow both. Meat should be cut in small pieces and fed three times a week. Clover hay can be cut into half inch lengths, steamed, mixed with bran, and fed as the morning ration. With wheat at noon and corn at night this forms a very evenly-balanced ration.

Thanksgiving Day will soon be at hand, and almost on top of it will come the Christmas holidays. All fowls which are to be marketed should now be undergoing the fattening process. The hens can be gotten ready in three weeks, but the turkeys and ducks should be attended to. It is comparatively easy to fatten fowls for the market in conjunction with the cool weather.

The late hatched chicks should be forced along in order to be placed on sale as soon as possible. The latter part of January or the beginning of February will doubtless be the best time to market them so as to get the best prices.

A Good Chance.

EDITOR AMERICAN FARMER: One farmer who I met this past Summer told me that he would devote more time to poultry raising if he could secure a good, steady boy between 10 or 12 years of age to help him about the farm. Such a boy could be sure of an excellent home, a thorough training in farm life, get his boarding, clothing, and spending money, and during the Winter and Fall go to one of the best colleges in the State of Ohio. This farmer, on account of old age, has to give up much of the work about his place, and being well off, he can afford to help such a boy to advancement both in farming and education.—J. W. CAUGHEY, Pittsburg, Pa.

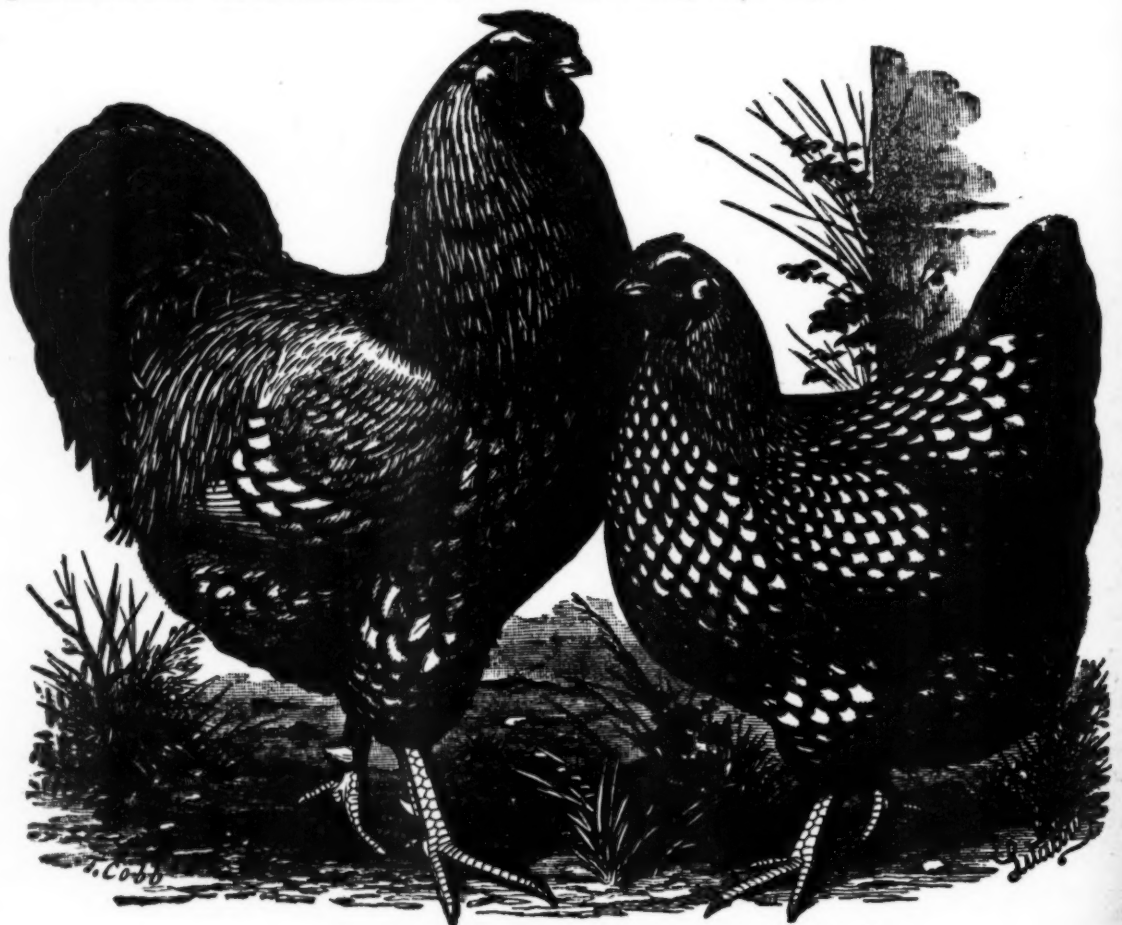
Golden Wyandottes, an Excellent and Highly Esteemed Breed.

This variety of fowls, although one of the youngest of our many varieties, has rapidly gained favor wherever they have been introduced. They are highly esteemed in all sections of this country, as well as in England and other foreign countries.

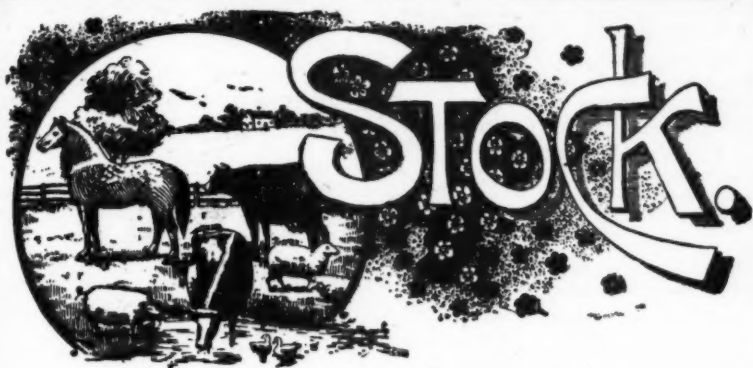
To attempt to describe their handsome appearance would be almost impossible. They must be seen to be appreciated. Their plumage is rich golden bay and iridescent greenish black, the center of the feathers gold, with black edging or lacing. Their beautiful plumage, fine form, neat rose combs, and handsome orange yellow legs make them objects of great admiration. As Winter layers they rank among the best, producing nearly as many eggs in a year as the non-setting varieties. As a table fowl they are unexcelled, being plump and meaty, and the flesh of fine flavor. They are easily fattened at any age.

In short, they are the best fowl for the farmer, the fancier, the market poultryman whose desire is to have his dressed poultry make a fine appearance, and the city or village resident who keeps a few fowls for pleasure and profit.

The picture appearing in this issue represents a pair of the Mohawk strain, cock, "Empire King," and hen, "Queen of the Mohawk," bred and owned by Emery S. Pugh, Utica, N. Y. These birds have never been defeated in the show room, each one having won first prize wherever exhibited. Among their honors are first prize at both the New York State Fair, at Syracuse, 1892, and New York and New England Fair, at Albany, 1892.



A PAIR OF PRIZE-WINNING GOLDEN WYANDOTTES.



Stable Talk.

The statement is made that thoroughbred mares are the best from which to raise mules.

Feed all your apple pomace to the cattle; it is too valuable to waste. While it may not be a fattening food, yet for its medicinal properties it is valuable.

It cannot be said that the horses on the average farm do not get enough to eat, but it can be safely said that they do not get the currying and grooming the city horse does.

The English farmer recognizes the fact that corn is not a good food for growing animals. As a result of this he has a staple food composed of beans and oats ground together. This piece of news may be of some use to the American farmer.

Cattle Feeding.

The farmer who makes cattle a part of his system of farming, either in breeding, feeding, or dairying, is keeping an eye on the condition of his animals, the pastures, and the food supplies put up for Winter. This class of farmers take no chances on pulling cattle stock through the Winter on short allowances of feed. Formerly, more than now, farmers permitted themselves to become overstocked with cattle, and as Spring approached the food supply ran low and much loss of condition and lives were the consequences.

This may be true to the present day on frontier farms and where open ranges are used during the grazing season of the year; but on well-established, well-regulated farms all this haphazard way of taking chances is carefully avoided. It is the practice to have breeding and store cattle come to Winter in strong condition. The frosty, frozen grass is supplemented by some feed that gradually brings the animal from grass to dry food. Thus the sudden and dangerous effects of getting cattle on to Winter food are avoided. The feeding cattle have been for some time receiving green corn cut and delivered to them with caution that will not get them off their appetites, and increasing gradually to Fall feeds as pastures fail. They will soon be confined to yards or stalls, as may be the custom of finishing off.

Where cattle are confined to stalls it is a good plan to give the closest attention to cleanliness and sanitary conditions. The stalls should be supplied regularly, twice a day, with clean straw, and the animals should be groomed with

regularity. It pays as well as the food, though less important, of course.

The practice of feeding in yards has long been in favor with Western farmers. It may be considered a wasteful system, but it is the rule to use two or three yards and have hogs follow the cattle to pick up the waste, of which there is always more or less that otherwise would be a loss.

One carload of hogs is generally fattened on the waste and excrement of two carloads of cattle. Much will depend on the condition of the hogs at the commencement of feeding.

Gradually, however, even in the West, this careless, wholesale way of feeding cattle is giving way to more painstaking and economical methods by putting them in stalls. Some turn them loose once a day in the yard to bask in the sunshine, get water, and for the little possible exercise which may be recommended, though not always admitted. The case of store cattle is less careful in the system of feeding and management than with stall feeding or with dairy cattle. They are generally kept in comfortable and dry sheds, full fed to secure a rational growth and development.

The dairy cattle farmers give the most scientific treatment to their milch cows of any class of farm stock. This will from time to time be treated specifically in our columns.

The Improvement of Farm Animals.

It has long been the custom, and it is a good one, to patronize those who keep stallions. Without such patronage there would have been but little improvement of horses in this country. It is found to be cheapest to hire than to own and care for a first-class stallion.

This patronage has extended to those who may find it convenient and profitable to keep a valuable bull, boar, or ram; but in these last-named animals there is room for extending this co-operative way of improving stock. As the people come to appreciate the value of improved stock these methods and opportunities will become more common. Many a farmer would be glad to keep male animals if they could afford to pay the prices asked. The plan is suggested here that two, three, or half a dozen farmers consult together and enter into partnership or contract to pay a certain sum annually, and thus find the way for continued improvement of all farm animals.

Artichokes, in addition to being cheap and excellent food for pigs, are said to be preventives of cholera.

The Treatment of Hogs in November.

The farmers of the United States, particularly in the corn belt, understand and practice the most rational methods such as secure good results in the raising, feeding, and selling of hogs. They have studied how to make hog raising pay, and often avoid the mishaps and failures that formerly disappointed the hopes and expectations of the years, labors, and profits.

On grain farms, where hog raising is carried on methodically, the pigs have been looked after all Summer. They have had the range of the stubble fields, the orchards, and in most cases a clover field to fall back on when the other resources failed or were inexpedient. On many farms green corn has been given the hogs since roasting ears were a little too hard for table use. Not only were the green ears consumed, but the leaves and stalks also. Such treatment has, provided the hogs are free from cholera, brought them to this date in fine, lusty condition for shoving the matured corn to them and finishing for the market.

Where open ranges are used, or where corn is not the main resource of the business, various practices are found. In some instances the pigs have had a precarious existence until this date, when the mast is reached—chestnuts, acorns, and forest foods—when they gain rapidly and in an incredible short time are ready for some corn to harden their fat when they are sold. If the mast is other than white oak, it is the experience of the writer that some corn should be given hogs to keep them healthy.

In some sections of the country farmers raise hogs in strict confinement and are fed slops, garbage, clover, grass, fruit, etc., from the time of birth. They rarely finish these pigs, but sell them in the Fall to farmers who finish them for home supplies of bacon, lard, sausage, and head cheese.

There is a large section of country in which hogs are raised, or rather raise themselves, in the forest without the fostering hand of man. In such situations no systematic breeding is possible. Some attention may be given to ownership, extending no farther, however, than marking the ears and altering the boar pigs. It is a poor and uncertain way of raising hogs; but if they live, get fat, and are gotten at killing time they are clear gain, since they have not cost their owners anything.

To return to the more respectable system of hog raising, and where hogs are raised on grain farms. At this date hogs are shut up in pens often without floors of any sort, and fed all the corn in the ear they can eat. It is neither shelled, ground, or cooked for them. Whole corn, water, soft coal, and in some cases salt, make up the entire regime from the time feeding begins until they are finished. This system is condemned by many careful men, but it has long been practiced by Western raisers, and will continue to be for a long time to come.

The store hogs and pigs ought at this date to be in fine condition for either finishing farther on toward Spring or holding over for next year's crop.

Formerly it was the practice to hold hogs until two years old before fattening. The cholera taught farmers the im-

portance of pushing pigs from birth and making them weigh 200 to 250 pounds at 10 months old. This required better breeds than used to be kept, and these weights are easily secured now with proper attention to feeding. The cholera thus had less time to get in its work, and much loss was avoided. It became a matter of much importance as to the time pigs should come, and was made to suit farmers on local and economic conditions. On this new plan only one crop of pigs was permitted a year, and all were fattened except the sows for breeding. When the hog crop was sold there were no hogs on the farm save these sows, and their breeding and Winter management received special attention suited to the case. November is an important month to Northern hog raisers; it is the harvest month.

Pen Notes.

The cool weather of October and November is the best time of the year in which to fatten the hogs.

There is a certain stage reached in the fattening of a hog after which it is unprofitable to lay on more flesh. It is better to sell them before they have reached this stage, and while they are not so heavy, rather than wait until after.

Of two evils, choose the least is an old saying. Swine raisers have often been told of the danger in allowing hogs to wallow in mud and filth, but comparatively little has been said about dust. We see it stated that dust will kill hogs with the rapidity of cholera. Better keep the pen clean and avoid each of these.

Every other question of the day is talked of; politics is never overlooked, the weather, the seasons, the crops are topics of interest, but the welfare of the flock, the pastures, water supply, the thrift and growth of lambs, the breeding and management, are seldom referred to. This is all wrong. In the exchange of views and comparison of experiences new ideas are gotten and better methods suggested.

PENNSYLVANIA ROUTE.

Formed by the Northern Central and Pennsylvania Railroads on the West, Northwest and Southwest to

PITTSBURG, CINCINNATI,
LOUISVILLE, INDIANAPOLIS,
CHICAGO, ST. LOUIS and
OTHER PROMINENT POINTS.

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Rolled Gold and Silver Scarf Pins and Watch Charms.



No. 100. No. 101.

No. 100 is a rolled gold scarf or lace pin, a horse's head and horseshoe. Sent as a premium for a club of two subscribers. For sale, delivered..... 60c

No. 101 is a solid rolled gold sword scarf or lace pin. Sent as a premium for a club of two subscribers. For sale, delivered..... 65c



No. 102. No. 103. No. 104.

No. 102 is a beautiful solid rolled gold scarf or lace pin in the shape of a handsome sword. Sent as a premium for a club of two subscribers. For sale, delivered... 75c

No. 103 is a sterling silver scarf or lace pin. Sent as a premium for one subscriber and 10 cents added. For sale, delivered, for..... 40c

No. 104 is a scarf or lace pin made of finely alloyed silver, showing the famous record breaker, Nancy Hanks. Sent as a premium for one subscriber and 10 cents added money. For sale, delivered, for..... 40c



No. 105. No. 106. No. 107.

No. 105 is a bull dog scarf or lace pin made of finely alloyed silver. Sent as a premium for one subscriber and 10 cents added money. For sale, delivered, for... 40c

No. 106 is a lucky scarf pin made in the shape of a horseshoe. Sent as a premium for a club of two subscribers. For sale, delivery guaranteed..... 60c

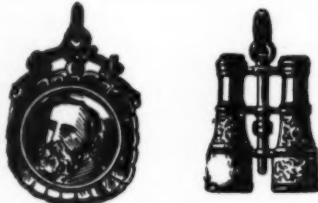
No. 107 is our great Jumbo scarf or lace pin. This is made of solid alloyed silver, and the caparsons are richly engraved. Sent free for one subscriber and 10 cents added money. For sale, delivery guaranteed, for..... 40c

No. 108 is a ladies' solid silver chateleine made of sterling cut work. The swivel at the bottom holds a watch, and if detached it is useful as a breastpin. Sent as a premium for a club of five subscribers. For sale, delivered..... \$1.50



No. 108. No. 109.

No. 108 is a charm representing the earth. It is beautifully colored and gilded. The trimmings are solid rolled-gold plate. Sent as a premium for one subscriber and 10 cents added money. For sale, delivery guaranteed, for..... 60c



No. 110. No. 111.

No. 110 has the face of Columbus in front, and on the back a genuine stone. Sent free as a premium for one subscriber and 10 cents added money. For sale, delivery guaranteed, for..... 60c

No. 111 is a pair of opera glasses, size of cut, to be worn as a watch charm. They may be ordered with World's Fair views or with a landscape in one side and the Lord's Prayer in the other. Sent free as a premium for a club of two subscribers. For sale, delivery guaranteed, for..... 75c

Sent with THE AMERICAN FARMER one year for \$1.60.



No. 112.

No. 112 represents a pair of patent-lever cuff buttons. These are either silver or gold plated and decorated with a jockey cap, whip, and horseshoe. Sent free for two subscribers. For sale, delivery guaranteed, for..... 85c

Sent with THE AMERICAN FARMER for \$1.60.

A FAMILY DRUG STORE.

A little medicine administered at the right time will often prevent a serious illness. THE AMERICAN FARMER has had a few simple remedies prepared for its subscribers according to formulas of the best N. Y. Physicians.

HANDY BOX No. 2

Contains 100 Quinine Pills, 2 grains.

100 Quinine Pills, 3 grains.

Quinine in bulk, 65 cents per ounce. This is the best, and highest-priced quinine in the market. The price of this box by insured mail is \$1.

HANDY BOX No. 3

Contains 100 Quinine Pills, 2 grains.

100 Cathartic Pills.

100 Liver Pills.

100 Anti-constipation Pills.

100 Iron Pills.

100 Anti-dyspepsia Pills.

These 600 pills, put up in a neat box with full directions for use, will be sent by insured mail to any address for \$1.

SPECIAL REMEDIES.

If any subscriber wishes a special remedy it can be obtained from this paper at the following rates:

150 Anti-malarial Pills..... \$1

250 Tonic Pills..... 1

250 Skin Pills..... 1

250 Peppin Tablets..... 1

250 Diarrhea Pills..... 1

150 Anti-nervous Pills..... 1

250 Anti-cold Tablets..... 1

150 Kidney Pills..... 1

100 Headache Pills..... 1

A sample packet of the foregoing nine remedies, containing 25 headache pills and 50 of each of the others, will be sent by insured mail for \$1. This sample packet is our Box No. 4, and should be ordered by that number.

PLASTERS—PEPSIN—POTASH.

Plasters should be kept in the house. It does not pay to make them.

Belladonna Plasters, 7 inches by 1 yard, 75 cents.

Mustard Plasters, 6 inches by 1 yard, 45 cents.

Surgeon's Rubber Adhesive Plaster, 1 inch by 10 yards, on spool, 50 cents.

Saccharated Peppin in half-pound packages, \$1.45.

Antipyrine, 2 grain tablets, \$1.35 per 100. Bromide of potassium, 5 grain tablets, 30 cents per 100. Best worm medicine for children, half a grain each of santolin and calomel, 45 cents per 100.

Address THE AMERICAN FARMER, Washington, D. C.

EVERYONE HIS OWN MILLER.

Feeling sure that every farmer who has chickens and every housekeeper who keeps a well-equipped kitchen will see the advantage of having a small grist mill that can be operated by hand, we have found the best one on the market and offer it on advantageous terms to subscribers.

The above is a good picture of it.

It is adapted for grinding coffee, spices, corn, wheat, or grain of any kind for domestic purposes. For feeding it can be so changed as to crush shells and grind grain to any desired coarseness.

The chilled-iron burrs are four and a half inches in diameter, and are ground perfectly true.

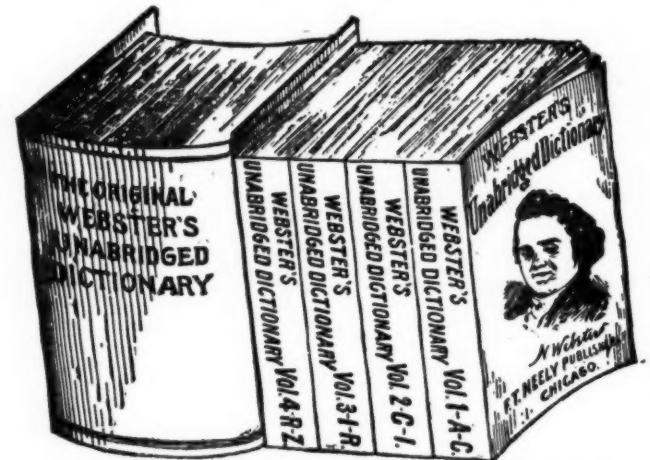
The steel shaft and fly-wheel is 20 inches in diameter. In fact, the mill is of the best workmanship in every respect, all parts being made to duplicate. By being screwed to a table or counter it is always in place.

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THE MARKETS.

WESTERN WOOL.

Jas. M. Millan & Co.'s (Minneapolis, Minn.) report says: About all the wool has been sold or shipped East and the receipts are small, and little interest is taken in the remaining lots that are yet to come forward. We would be pleased to have anyone still holding scattering lots of wool to ship them in. The demand is good and more wool is being used by American mills than ever before. At present prices for wool and fat and stock sheep, particularly for sheep, there is more money in raising sheep than in anything else. Sheep will average \$3 to \$4 a head at the present time, and it is not better for the country to raise double the number of sheep, which keep the farms from running out and free from weeds, etc., than to raise such a large amount of wheat, which exhausts the land and glut the market? Sheep are increasing rapidly, and if there is no change in the present administration, the raising of sheep for their wool, mutton, and lambs, and the good they will do the land, will be very profitable for the next four years. But if the people decide that they want a change of administration the tariff on wool will be entirely removed, and the sheep industry destroyed, as they decreased very rapidly during the four years succeeding the election of 1884. West will urge sheep growers in the Dakotas and Territories where there is danger from scab to dip them this fall to insure them freedom from scab, lice, ticks, etc., during the winter.

Boston, Oct. 26. The general tone of the market is steady, although in the lower grades of wool there is more or less of an easier feeling. The demand is not so active as it has been for the past week or two, but a good fair amount has been sold. The market is well supplied with all kinds, with the exception of fleeces, the supply of which has been steadily reduced, and the range of prices on these wools is on a firm basis. There is no improvement to report in values, and at the same time there are no indications that prices will go any lower. The woolen goods' market is in a good position, and this with the fact that the supply in the interior is well cleaned up and the firm tone of the markets abroad indicates that quotations are liable to be on a very steady basis for some time to come. Lower prices are certainly out of the question. The demand this season has been very good, and the total sales thus far are ahead of those of last year, and the large supplies are being steadily reduced.

Ohio and Pennsylvania fine washed fleeces are the firmest wools in the market. The supply is not large, and a good, steady demand is reported. There is no advance to report in prices, as manufacturers are not willing to pay any higher values. Good XX can be bought for 25c, and 25c is the outside price for XX and XX and above. All the sales of XX wools were made at 25c per pound. The demand is mostly for XX wools. There is a very little doing in No. 1 wools at 32c-33c per pound. Michigan wools are having a quiet sale at 25c. The supply is ample for the demand. No. 1 Michigan fleeces are very quiet at 31c-32c per pound. The market for combed and delaine fleeces is steady, but is not very active. No. 1 Ohio combed fleeces at 34c, with Michigan lots at 33c-34c per pound. Delaine fleeces are steady at 31c-32c for Ohio lots, and 28c-30c for Michigan. There is a good demand for unwashed combeds at 24c-25c for 1 bloods, and 24c-25c for 1/2-blood wools. Sales of coarse lots were made at 22c. Ohio and Michigan unwashed and unmerchantable fleeces are quiet and steady at prices ranging from 17 to 22c.

Territory wool continues to be the weakest in the market. The supply is very large, and with the quiet demand prices are in the buyer's favor. Sales were made inside the range of 15c to 20c per pound. Sales of medium wool were made on a scoured basis at 48c-50c, and one sale of good wool was made as low as 47c per pound. The outside price for fine wool is 55c per pound, while fine medium is selling at 52c-53c per pound. There is a very little doing in Spring Texas wool, and the supply here is not large. Prices range from 10c to 20c per pound, as to quality. Fall wools are arriving, and choice lots find a sale at 48c-49c, scoured. Outside of one large sale of 400,000 pounds of California Spring wool, the demand for these wools has been quiet. The outside price is 24c, while sales have been made as low as 13c per pound. The receipts of Fall California wool are not large, and most of the arrivals are in a heavy condition, finding a hard sale—in fact, no sales are reported this week. The bulk of the clip has been taken in San Francisco. The good demand for Eastern Oregon wool continues, prices ranging from 15 to 20c per pound. Valley Oregon is in small supply and sales are quite limited. Georgia and Southern wools are having a good sale at steady prices.

There is no material change to note in pulled wools. The demand is quiet and prices are steady. Sales on a scoured basis are made as follows: A super, 48c-50c; B lambs, 45c-48c; C super, 38c-40c; fine combeds, 50c-53c; short extras, 48c-50c per pound.

Australian wools are firm and steady and are having a good, steady demand at prices ranging from 33 to 40c per pound. Carpet wools are firm and quiet.

The other quotations are steady and unchanged.

COTTON.

LIVERPOOL, Oct. 27. Cotton futures closed steady; American—Midland, low middling clause, October delivery, 42-64d-44-44d; October and November delivery, 42-64d-44-44d; November and December delivery, 42-64d-44-44d; December and January delivery, 42-64d-44-44d; January and February delivery, 42-64d-44-44d; February and March delivery, 42-64d-44-44d; March and April delivery, 42-64d-44-44d; April and May delivery, 42-64d-44-44d; May and June delivery, 42-64d-44-44d.

NEW YORK, Oct. 27. The spot market ruled dull. There was further talk of frost in the South, but it had no influence, and the market closed fairly steady.

Months.	Closing prices.	High-Low.	Est. est.	Sales.
October.....	\$7 88 7/8	\$7 89	\$7 89	200
November.....	7 87 1/2	7 88	7 84	45,000
December.....	8 04 1/2	8 05	8 07	7 99
January.....	8 17 1/2	8 18	8 20	124,300
February.....	8 29 1/2	8 30	8 32	29,400
March.....	8 40 1/2	8 41	8 42	23,900
April.....	8 50 1/2	8 51	8 52	4,000
May.....	8 60 1/2	8 61	8 62	7,000
June.....	8 69 1/2	8 70	8 71	400
July.....	8 78 1/2	8 79	8 80	1,100

GALVESTON, Oct. 26. Cotton quiet; middling, 7 1/2; low middling, 7 1/4; good ordinary, 7c.

SAVANNAH, Oct. 26. Cotton quiet; middling, 7 1/2; low middling, 7 1/4; good ordinary, 7c.

NEW ORLEANS, Oct. 26. Cotton steady; middling, 7 1/2-15c; low middling, 7 1/4-15c; good ordinary, 6 1/2-15c.

LIVE STOCK.

CHICAGO, Oct. 26. Cattle—There was no material change in the cattle market. Desirable native "beef" cattle were rather scarce and firm, while other grades were rather dull and weak. Two-thirds of the fresh arrivals were Texas and Westerns and the quality of the range was rather poor. Quotations are as follows:

Choice to extra steers, 1,500lb, 750	\$5 00 a 5 75
Good to choice steers, 1,300lb, 500	4 00 a 4 80
Fair to good steers, 1,000lb, 300	3 20 a 3 80
Poor to medium steers, 900lb, 100	2 85 a 3 15
Good fancy cows and heifers	1 80 a 2 50
Inferior to good cows and heifers	80 a 1 60
Stock steers, 600lb, 800	1 50 a 2 30
Feeding steers, 900lb, 300	3 05 a 3 25
Veal calves, 100lb, 400	3 00 a 5 25
Texas steers, 750lb, 150	2 25 a 3 00
Western rangers, steers	3 00 a 4 40

Hogs—The hog market opened steady to 5c higher, but later advanced 10c more, closing strong and 10c-20c higher than last Saturday's prices. Receipts were below the requirements of the trade, as outside buyers took two-thirds of the offerings. The market closed very strong, with everything in second hands. The quality of the offerings was rather poor, and shippers were unable to fill their orders for "good hogs." Sales ranged at \$5.10-5.50, with pigs at \$4.30-5.50. Best heavy sold up to \$5.35, best mixed at \$5.35, and best light at \$5.80. Heavy sold largely at \$5.50-5.75.

Sheep—Trade was active and sheep ruled steady, and desirable lambs 10c-20c higher. Native sheep sold at \$3.45, largely at \$4.50-4.75; Westerns averaging 80-120 pounds sold at \$3.75-4.00, and native lambs averaging 60-87 pounds at \$4.50-5.50.

GRAIN AND BREADSTUFFS.

CHICAGO, Oct. 27. The lowest point of the year was reached by wheat prices to-day. Other cereals were also depressed, but all showed strength at the close. The heavy increase of stocks and the scarcity of storage room were among the main causes of the weakness.

Corn was only moderately active, influenced partly by fine weather, which, it was thought, would insure a continuance of liberal receipts and also affected some by the weakness in wheat. Initial trades were at 1/2c decline, the market afterward sagging off another 1/2c on moderate offerings, the local crowd being more inclined to sell short than on yesterday, and at the decline the demand improved greatly, but the market recovered 1/2c of the break, changed some, ruled steady at the close.

Mixed oats in the cash market were dull and neglected. This served to depress the speculative market, and pressure to sell carried down the price 1/2c. Later there was a fair recovery. Quotations were:

	Open.	High.	Low.	Close.
Wheat—October.....	71 1/2	71 3/4	71 1/4	71 1/2
December.....	73 1/2	73 3/4	73 1/4	73 1/2
May.....	79 1/2	79 3/4	79 1/4	79 1/2
Corn—October.....	41 1/2	41 3/4	41 1/4	41 1/2
December.....	42 1/2	42 3/4	42 1/4	42 1/2
May.....	46 1/2	46 3/4	46 1/4	46 1/2
Oats—November.....	29 1/2	29 3/4	29 1/4	29 1/2
December.....	31 1/2	31 3/4	31 1/4	31 1/2
May.....	35 1/2	35 3/4	35 1/4	35 1/2

FRUITS AND VEGETABLES.

NEW YORK, Oct. 27. Prime Northern Spy and Spitz apples are quite steady. There are plenty of Baldwin apples in the market. Greenings are rather scarce, and choice qualities are very firm. Cranberries are more plentiful, and prices are easier. The supply of pears is not large, but only fancy grades meet with ready sales. Quinces are more plentiful and easier. We quote:

Apples, Northern Spy, prime, per barrel.....	\$1 75 a 2 25
Apples, Northern Spy, inferior to good, per barrel.....	1 00 a 1 50
Apples, Spitz, prime, per barrel.....	1 50 a 2 00
Apples, Gravenstein, per double-head barrel.....	3 00 a 3 50
Apples, King, per double-head barrel.....	2 50 a 3 00
Apples, Baldwin, prime, per double-head barrel.....	1 50 a 2 00
Apples, Baldwin, medium, per double-head barrel.....	1 00 a 2 25
Apples, 20-cane, per double-head barrel.....	2 50 a 3 50
Apples, Fall Pippin, per double-head barrel.....	2 50 a 3 00
Apples, Greening, per double-head barrel.....	1 50 a 2 75
Apples, ordinary, per barrel.....	50 a 1 00
Cranberries, Cape Cod, prime, per barrel.....	5 00 a 5 50
Cranberries, Cape Cod, poor to good,	

per barrel.....	\$3 00 a 4 50
Cranberries, Cape Cod, choice, per crate.....	2 00 a 2 25
Cranberries, Cape Cod, good, per crate.....	1 62 a 1 87
Cranberries, Belle, fancy, per barrel.....	6 00 a 7 00
Cranberries, early black, per barrel.....	5 75 a 6 00
Cranberries, New Jersey, per crate.....	1 25 a 1 75
Grapes, western New York, Niagara, in trays, per pound.....	3 a 3 1/2
Grapes, western New York, Niagara, per 5-pound basket.....	13 a 17
Grapes, western New York, Catawba, per 5-pound basket.....	13 a 14
Grapes, western New York, Delaware, per 10-pound basket.....	25 a 30
Grapes, western New York, Delaware, per 5-pound basket.....	14 a 18
Grapes, western New York, Concord, per 5-pound basket.....	11 a 12 1/2
Grapes, western New York, Concord, per 10-pound basket.....	17 a 19
Grapes, up-river, Concord, per pound.....	2 1/2 a 3
Grapes, up-river, Niagara, per pound.....	3 a 4
Grapes, up-river, Concord, in trays, per pound.....	1 1/2 a 2
Grapes, up-river, Concord, barrel, per pound.....	1 a 1 1/2
Grapes, up-river, Pocklington, per pound.....	3 a 4
Pears, Beurre d'Angou, per barrel.....	3 50 a 4 50
Pears, Duchess, per barrel.....	2 00 a 2 50
Pears, Koffler, per barrel.....	2 50 a 3 50
Pears, Beurre Rose, per barrel.....	5 00 a 7 00
Pears, Seckel, choice, per barrel.....	6 00 a 7 00
Pears, Seckel, inferior to good, per barrel.....	3 00 a 5 00
Pears, Seckel, per keg.....	2 00 a 3 00
Pears, Louise Bonne, per barrel.....	3 50 a 4 50
Pears, cooking, per barrel.....	2 00 a 2 50
Quinces, apple, fancy, per barrel.....	3 00 a 3 25
Quinces, apple, medium to good, per barrel.....	2 25 a 2 75
Quinces, inferior, per barrel.....	1 50 a 2 00

The market for beans was steady to-day. There is a good demand for red kidneys for export. Lima beans are steady. Green peas are not plentiful, but the demand is not great. We quote:

Beans, marrow, new, choice.....	\$3 45 a 2 50
Beans, marrow, old, choice.....	2 35 a 2 40
Beans, medium, new, choice.....	2 05 a 2 10
Beans, medium, old, choice.....	1 95 a 2 00
Beans, pea, new, choice.....	3 05 a 3 10
Beans, pea, old, choice.....	2 85 a 2 90
Beans, red kidney, new, choice.....	2 75 a 2 85
Beans, red kidney, old, choice.....	2 60 a 2 65
Beans, Lima, California, per 60 pounds, new, choice.....	2 05 a 2 10
Green peas, new, choice, per barrel.....	1 75 a 1 80
Green peas, new, bags, per bushel.....	1 70 a 1 75
Green peas, Scotch, per bushel.....	1 70 a 1 75

Vegetables—The receipts of potatoes for the past six days were 38,280 barrels, and of onions 6,281 pecks. Long Island potatoes are steady. State potatoes are very plentiful. Sweet potatoes are rather scarce and prices are quite firm. Prime onions are not plentiful and prices are firm. Cabbage is steady, and tomatoes have advanced in price. Cauliflower is plentiful and prices have declined. We quote:

Potatoes, L. I., per barrel.....	\$1 75 a 2 25
Potatoes, Jersey, prime, per barrel.....	1 75 a 2 00
Potatoes, Jersey, inferior, per barrel.....	1 25 a 1 62
Potatoes, up-river, per barrel.....	1 75 a 2 00
Potatoes, State, per barrel.....	1 75 a 2 00
Sweet potatoes, Southern, yellow, prime, per barrel.....	1 87 a 2 00
Sweet potatoes, Southern, yellow, inferior to fair, per barrel.....	1 50 a 1 75
Sweet potatoes, Jersey, prime, per barrel.....	2 25 a 2 50
Sweet potatoes, Jersey, fair to good, per barrel.....	1 75 a 2 00
Sweet potatoes, Monmouth County, choice, per barrel.....	2 50 a 3 00
Onions, Connecticut, yellow, per barrel.....	2 25 a 2 50
Onions, Connecticut, white, per barrel.....	2 00 a 2 50
Onions, Connecticut, red, per barrel.....	2 50 a 2 50
Onions, Orange County, red, per barrel.....	1 50 a 2 25
Onions, Orange County, yellow, per barrel.....	1 75 a 2 25
Onions, State, yellow, per barrel.....	2 00 a 2 50
Onions, Western, yellow, per barrel.....	2 00 a 2 50
Cabbage, flat Dutch, per 100.....	4 00 a 6 00
Tomatoes, per box.....	50 a 75
Squash, marrow, per barrel.....	1 00 a 1 25
Squash, Hubbard, per barrel.....	1 00 a 1 25
Lima beans, Jersey, per bag.....	1 50 a 3 00
Eggplants, per barrel.....	75 a 1 00
Cauliflower, choice, per barrel.....	1 25 a 1 50
Cauliflower, poor to good, per barrel.....	75 a 1 00
Pumpkins, per barrel.....	50 a 75
Celery, Michigan, per dozen bunches.....	35 a 50
Celery, State, per dozen bunches.....	10 a 25
Turnips, Russia, per barrel.....	75 a 85
Peppers, per barrel.....	40 a 60
String beans, Southern, per basket.....	75 a 1 00
Green peas, Southern, per basket.....	1 00 a 1 50

HAY AND STRAW.

The receipts of hay are not large, and prices are quite firm. Prime straw is in good demand. We quote:

Hay, No. 1, per 100 pounds.....	..a50
Hay, No. 2, per 100 pounds.....	75a80
Hay, No. 3, per 100 pounds.....	65a70
Hay, clover, mixed, per 100 pounds.....	60a70
Hay, shipping, per 100 pounds.....	..a65
Hay, salt, per 100 pounds.....	..a50
Long rye straw, per 100 pounds.....	..a60
Short rye straw, per 100 pounds.....	40a45
Oat straw, per 100 pounds.....	40a50
Wheat straw, per 100 pounds.....	..a40

BUTTER AND CHEESE.

NEW YORK, Oct. 27. The market for butter was generally firm to-day. Fresh State dairy is scarce and quite firm. There has been a further advance in prices of

upper grades of creamery. Western dairy is firmer. Imitation creamery and factory are steady. We quote:

State dairy, half-skim tubs, fancy, per pound.....	25a28
State dairy, half-skim tubs, good to choice, per pound.....	23a25
State dairy, half-skim tubs, fair to good, per pound.....	20a23
Welsh tubs, fancy, per pound.....	25a28
Welsh tubs, good to choice, per pound.....	23a25
Welsh tubs, fair, per pound.....	20a23
Eastern creamery, fancy, per pound.....	25a28
Eastern creamery, choice, per pound.....	23a25
Eastern creamery, fair to good, per pound.....	20a23
Elgin creamery, fancy, per pound.....	..a29
Pennsylvania creamery, fancy, per pound.....	..a29
Western creamery, fancy, per pound.....	25a28
Western creamery, choice, per pound.....	23a25
Western creamery, fair to good, per pound.....	20a23
Western dairy, choice, per pound.....	21a23
Western dairy, fair to good, per pound.....	18a18
Imitation creamery, fancy, per pound.....	21a23
Imitation creamery, good to choice, per pound.....	20a21
Imitation creamery, fair to good, per pound.....	18a20
Factory, fresh, choice, per pound.....	15a16 1/2
Factory, fresh, medium to good, per pound.....	14a15 1/2
June packed, per pound.....	15a17

Cheese—The receipts of cheese for the past six days were 45,900 boxes. Fancy and choice cheese is in fair demand, but under grades are slow. The quotations from Liverpool to-day, as reported by cable, are 62s, and a firm market. We quote:

State factory, new, fancy, white, per pound.....	..a10 1/2
State factory, new, fancy, colored, per pound.....	10a10 1/2
State factory, new, full cream, choice, per pound.....	9a..
State factory, new, fair to prime, per pound.....	8a 9/4
State factory, ordinary, per pound.....	7a 9/4
State factory, part skims, choice, per pound.....	7a 7/4
State factory, part skims, fair to good, per pound.....	4 1/2a 5 1/2
State factory, full skims, per pound.....	1a 3

POULTRY AND EGGS.

Choice live geese and ducks are quite steady. Prime live chickens meet with ready sales. Choice live turkeys are steady, but inferior birds are dull. The market on dressed poultry was not very active to-day. Choice and good chickens are steady. There is a large supply of turkeys, while the demand is only moderate. There is a good demand for choice young ducks. Turkeys are just steady.

LIVE POULTRY.

Geese, Western, per pair.....	\$1 37 a 1 62
Geese, Southern and Southwestern, per pair.....	1 25 a 1 50
Ducks, New York, New Jersey, and Pennsylvania, per pair.....	60 a 90
Ducks, Western, per pair.....	50 a 75
Chickens, near-by, per pound.....	9a 10 1/2
Chickens, Western, per pound.....	9a 10
Chickens, Southern, per pound.....	9a 9 1/2
Fowls, State, Pennsylvania, and Jersey, per pound.....	10 a 11
Fowls, Western, per pound.....	10 a 10 1/2
Fowls, Southern, per pound.....	10 a 11
Turkeys, mixed, per pound.....	10 a 12
Roosters, mixed, per pound.....	6a ..

DRESSED POULTRY.

Chickens, Philadelphia, large, fancy, per pound.....	..a 16
Chickens, Philadelphia, mixed weights, per pound.....	12 a 15
Chickens, Western, dry picked, choice, per pound.....	11 a 12
Chickens, Western, dry-picked, fair, per pound.....	9 a 10
Chickens, Western, scalded, prime, per pound.....	..a 11
Chickens, Western, fair to good, per pound.....	9 a 10
Chickens, Western, poor, per pound.....	..a 8
Fowls, Western, choice, dry-picked, per pound.....	10 a 10 1/2
Fowls, Western, scalded, choice, per pound.....	9a 10
Fowls, Western, poor to fair, per pound.....	7 a 9
Old roosters, per pound.....	..a 7
Turkeys, dry-picked, young, choice, per pound.....	14a 15
Turkeys, dry-picked, young, medium to good, per pound.....	12 a 14
Turkeys, young, scalded, good to prime, per pound.....	11 a 13
Turkeys, mixed weights, per pound.....	12 a 14
Turkeys, inferior, per pound.....	8 a 10
Ducks, young, Eastern, per pound.....	17 a 18
Ducks, young, Long Island, per pound.....	17 a 18
Ducks, young, New Jersey, per pound.....	16 a 17
Ducks, young, up-river, per pound.....	16 a 17
Ducks, young, Western, choice, per pound.....	12 a 13
Ducks, young, Western, poor to good, per pound.....	8 a 11
Ducks, old, per pound.....	9 a 12
Geese, young, Eastern, per pound.....	..a 18

EGGS.

The market for eggs was just steady to-day and not much business was done. Fresh eggs are quiet. Prime limed eggs are steady, but other grades are dull. We quote:

Eastern, choice, per dozen.....	24 a 25
Western, choice, per dozen.....	23a 24
Western, good, per dozen.....	21 a 22
Icehouse, 1st dozen.....	18a 19
Limed eggs, Eastern, per dozen.....	18a 19 1/2
Limed eggs, Western, per dozen.....	18a 19
Limed eggs, Canada, per dozen.....	18a 19 1/2



Preparing for the After Events.

Mrs. Jones—Husband, the children have been invited to parties at different places, on the 11th, the 13th, the 15th, and the 18th. Shall I write acceptances?

Mr. Jones—Yes; and you'd better write to Dr. Snooks, while you're about it, asking him to call on the 12th, the 14th, the 16th, and the 19th.

Not Fitted for Traveling.

Little Dot—I wonder why there isn't ever any spider webs in the corners of railroad cars.

Little Dick—Spiders have eight eyes, an' I guess it's too much trouble to keep the cinders out.—*Street & Smith's Good News.*

Trying to Please.

Wife (in railway train)—It's mortifying to have you act so. Why don't you get up and help that young lady raise that window?

Dutiful Husband—She's so pretty I was afraid you'd be mad.—*New York Weekly.*

Not to be Repeated.

"Why are you so late?" The little girl hung her head and replied:

"We have got a little baby at our house."

"Don't let it occur again," said the teacher, fiercely. And the little girl said she would not, and took her seat.

His Will.

"John," said a poverty-stricken man to his son, "I've made my will to-day."

"Ah!" replied John, "You were liberal to me, no doubt."

"Yes, John, I came down handsome. I've willed you the whole country to make a living in, with the privilege of going elsewhere if you can do better."

The Cause.

She—Why do so many men tell lies?
He—Because so many women believe them.

A New Edition Just Out.



A Modest Demand.

Sam Bantry, a clerk on Harlem avenue, is a young man who suffers from defective eyesight and a long tongue. Not long since, in consequence of an unrestrained use of his unruly member, he received a challenge from a friend.

"I accept the challenge," said Bantry, "but as I am shortsighted I have one condition to demand."

"What is that?"

"As I can't see as far as my opponent, I demand that he be placed at least 10 feet nearer me than I am to him."

A Pair of Waiters.

She—A pretty time of night for you to come home!

He—A pretty time of night for you to be awake!

She—I've stayed awake for the last four hours waiting for you to come home.

He—And I have been keeping myself awake for the last four hours at the club waiting for you to go to sleep.—*Tid-Bits.*

An Explanation.

Mrs. New Lucre—Lusette, a friend of mine, informed me that on last Wednesday evening, at about 8 o'clock, she met you walking in the park with my husband. Is that true?

Susette (indignantly)—Non, madam! Eet is not true; it was on Juraday evening, about 10 o'clock."

Unanswered.

"Mamma, if a child should be born on the ocean, to what nation would it belong?"

"Why, to the nation to which his father and mother belonged, of course."

"Well, I know. But supposing his father and mother were not with him. Supposing he was traveling with his aunt?"

A Schoolboy's Anatomical Essay.

The body of a person is made up of the hed, the thorax and the abdomen. The hed contains the brains, if ther is any; the thorax contains the hart and lungs. The abdomen contains the bowels, of which ther are five; a, e, i, o, u, and sometimes w and y.

Only One Kind.

"This tree seems to be loaded with apples," remarked a stranger.

"Yes, sir," replies the rural miss. "Pop says this is a good apple year."

"I am glad to hear that. Are all your trees as full of apples as this one?"

"Oh, no. Only the apple tree."

Sam Wheeler's Sea Serpent.

Sam Wheeler was an uncouth rustic, who, had his chances of education and observation been more complete, might have been lunched upon the world as a second Munchausen. His favorite had to do with a sea serpent, and ran something like this:

"When I wuz comin' over the ocean," he said, "we wuz all woke up one mornin' by the ship a' rollin' 'round considerable. Goin' on deck, we saw a sea serpent crawlin' over it, an' gentlemen, it wuz such a big serpent that it took two days to git across that deck."

"Why didn't you kill it, Sam?"

"It went over so quick we couldn't," said Sam.

A Slip Betwixt the Cup and Lip.



"Now, smile a little, Miss Jackson, befo' I press in de button. One, two"—

II.



Johnnie—Tree! Dis is my turn, now." Phiz!!

III.



"Yo' nasty, black, insultin' nigger. I learn yo' better den to trifle wid my affections in dat manner."

Old and New.

Little Boy—Wot's the difference between high church and low church?

Little Girl—W'y, don't you know? One says "Aw-men," an' the other says "A-men."

Brother Gardner's Maxims.

"Jist now I feel dat if I had a millyon dollars I should sot out an' gib away ebery dollar of it to de pore an' distressed. In case I actually had de cash in hand I reckon I should invest it in houses an' brick houses an' gold watches, an' let some other millyonaire take keer of de sufferin' public."

"De aiverage man is a curus critter. He will sot down in de dark to eat harvest apples an' den light de lamp to complain of de wormholes he chewed up."

"Yo' kin find heaps o' men who will admit deir ignorance of events which hev occurred doarin' de last 200 y'ars, but when yo' cum to go back to de days of Adam ebery pusson is gwine to stick to it dat he knows all about it."

"It doan' look 'zactly right for one man to hev a big brick house an' anodder man only a board shanty, but long 'bout tax time I allus notice dat it am de brick house man who looks de most worried ober de situashun."

Street Car Courtesy.

The electric car was very full; so was the fellow who just got on. He caught a strap in front of a very pretty girl—the other strap in front of the girl was occupied by a young man. He seemed to belong to the girl; they seemed to belong to each other; they were on their wedding trip.

A disjointed umbrella happened to poke the drunkard, who began to let out a string of oaths.

The young man caught the fellow by the shoulder and shook him.

"How dare—you swear—before—before my wife?"

"How—how—di—did—I know—your wife wanted t—ker—swear first?" he said.

Broad Views.

They were talking over the interesting point of how far a million dollars could be made to go, when one of them said:

"A million silver dollars piled on top of each other would make a column two miles high."

"Really?" said the other. "Jove! What a broad view of the world one could get from the top of that column!"

"Yes," was the response. "And what a broad view of everything you could take at the foot of it, if you owned the column."

A Hard Position.

"It's awful to be foot of the class," said Master Tommy, after school was over. "I knew my lesson splendid this mornin', but by the time the teacher got down to me, I'd forgotten it all."—*Harper's Magazine.*

Mamma in a Hole.

Little Dick—This is Saturday, and mamma and papa are goin' to the theater to-night. I'm awfully glad.

Little Dot—Why is you?

Little Dick—'Cause she can't wash me to-night, an' she'll get up so late tomorrow morning she'll have to let me go dirty, or miss church.

THE AMERICAN FARMER SPECIAL JEWELRY PREMIUM LIST.

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We have not explained very fully all the points of excellence in workmanship and material when describing each article, on account of the space which would be required if a full description were given separately under each heading. There are some general points which can be better stated here, as they apply to all articles alike. With reference to the quality of this jewelry, it is all of heavy rolled gold plate except where it is expressly stated that the metal, whether gold or silver, is solid. It is understood, of course, that an article made of rolled gold has a base of cheaper metal upon which is joined, by means of heavy pressure under a high degree of temperature, a covering of gold of commercial fineness. This results in making an article having all the appearance of one which is gold clear through until the outside plate is worn out. In the case of our jewelry only plated goods of the highest class are used, as we patronize none except houses of established reputation.

With reference to the stones used in the rings, they are in every case exactly as represented, and only the experienced expert can detect the counterfeit or imitation stone from the genuine. It will be noticed, however, that in many instances genuine stones are used, and it is so stated. We guarantee the stones to be actually genuine in each instance where it is so announced. All of our goods are returnable if the purchaser is not satisfied, and the money will be refunded; provided, of course, the jewelry has not been worn or in any manner defaced.

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Gold Watch, \$12—Offer No. 1, Men's Size.



No. 1 is a men's size Waltham or Elgin gold-filled watch, with simple band and set, seven jewels, and all improvements; no compass throughout this watch.

Just like a \$100 solid gold watch. The case is guaranteed to wear 10 years just like solid gold. Watch chain has been selling this watch for \$25. Our price for registered mail, delivered, is only \$12, or we will send it as a premium for a club of 10 yearly subscribers at \$1 each and \$7.10 added money.

Gold Watch, \$14.35—Offer No. 2, Men's Size.

No. 2 is just like No. 1, but hunting case. Price, delivered, \$14.35, or sent as a premium for a club of 10 subscribers and \$4 added money.

Solid Gold Watch, \$25—Offer No. 3, Men's Size.

No. 3 is a genuine Waltham or Elgin watch, with 11 jewels, picked works, stem wind and set, compensation balance, safety pinion, and all improvements. It is men's size and comes in a solid gold Brooklyn Granger double-stroke case. Price, in silver open face or hunting case, delivery guaranteed, \$25, or sent as a premium for a club of 10 subscribers and \$17.20 added money.

Solid Silver Watches—Offer No. 4.

No. 4 comprises three distinct watches. They all have the same case, three ounce coin silver, open face or hunting case. Any one of the watches offered is a good and satisfactory timepiece, and we guarantee satisfaction every time, no matter what watch you select. Full-jeweled watches are generally better timepieces than those with less jewels. You have your choice of Waltham or Elgin works in the case named above. The prices, including delivery, are as follows:

Full-jeweled watch, \$10.00
11-jeweled watch, \$12.50
Full 12-jeweled watch, \$14.50

Or we will send the seven-jeweled watch, for a club of 10 subscribers and \$5 added money; the 11-jeweled watch for a club of 10 subscribers and \$7 added money; the full-jeweled watch for 10 subscribers and \$9 added money.

Full-Jeweled Watch, \$10—Offer No. 5, Men's Size.

No. 5 is a genuine Waltham or Elgin full-jeweled watch, containing all the great patents, such as compensation balance, safety pinion, set in winding and setting apparatus, shockless hair spring, hardened and tempered in form, patent regulator, etc. Set into a solid nickel silver, open-face case, with beveled plate glass crystal so heavy as to withstand any strain. The works alone usually sell at from \$12 to \$15. We send it by registered mail to any subscriber, delivery guaranteed, \$10 for

Sent as a premium for 10 subscribers and \$5.50 added money.

Ladies' Gold Watch, \$13.15—Offer No. 6, Hunting-Case Only.

No. 6 is a genuine Waltham or Elgin watch, ladies'

size, with seven jewels, compensation balance, safety pinion, shockless hair spring, hardened and tempered in form, patent regulator, etc. Set into a solid nickel silver, open-face case, with beveled plate glass crystal so heavy as to withstand any strain. The works alone usually sell at from \$12 to \$15. We send it by registered mail to any subscriber, delivery guaranteed, \$13.15 for

Ladies' Solid Silver Watch, \$9.50—Offer No. 7, Hunting-Case.



No. 7 is a solid coin silver watch, ladies' size. The works contain seven jewels, stem wind and set, and all improvements. Solid to subscribers only, delivery guaranteed and prepaid, for \$9.50.

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Our watch chains are the best in the world. They are made of solid rolled gold plate, and the links are soldered with solid gold, and in every way they present as good an appearance as if they were solid gold. Prices below include free delivery:

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No. 102. Curb chain, rolled gold, \$2.50
No. 122. Trace chain, 20-year filled gold, \$6.00
No. 123. Trace chain, 10-year filled gold, \$4.00
No. 124. Trace chain, rolled gold, \$2.50
No. 125. Aluminum chain, coin silver swivel, \$1.00
No. 126. Aluminum chain, just as perfect, strong as bandage, no silver, just as perfect, strong as steel, \$1.00

LADIES' WATCH CHAINS.

These chains are made of rolled gold, and are beautiful in design and perfect in finish. Prices include free delivery.

No. 3 has small links and a pendant chain made of solid open work. Price, delivered, \$1.75.

No. 4 has small links and pendant half gemstone. Price, delivered, \$2.00.

No. 5 is made of woven wire with a pendant. Price, delivered, \$2.25.

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We offer a beautiful assortment of solid gold-filled rings to our subscribers at the cost price to the retail trade. The stones used are genuine and finely cut and polished. In fact, there is no way of distinguishing these rings from solid gold except by sawing them in two. They are stamped 14K. The plate of gold on the outside of the rings is very heavy, and they are extremely popular this year.



No. 200. No. 201.

No. 200 is modeled after a \$15 solid gold men's ring. The shank is richly engraved, and it comes set with either a genuine (Gold Stone, Blood Stone or Red or Black Onyx). Sent free as a premium for a club of two subscribers. For sale, delivered, \$1.00.

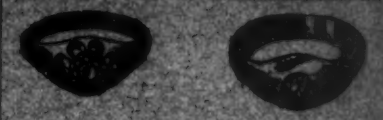
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